O1.4.1

Toolkit for creating a therapeutic relationship between patients after self-immolation and burns nurses

Schoone L[1], de Jong A[1]
[1]Rode Kruis Ziekenhuis, Beverwijk, Netherlands

AIM
Self-immolation in patients suffering psychiatric disorders is a reason for admission in the burn centre. Usually, non-psychiatric trained nurses care for these patients in psychiatric crises and with severe burns. For burns nurses, creating a therapeutic relationship is not naturally, due to a lack of expertise and training. This limits optimal care for these complex patients, since this relationship is important for contact and cooperation, wherein patients can express feelings, and nurses can control the situation. The aim of this study is therefore to provide insight into how nurses can establish therapeutic relationships with patients after self-immolation.

METHOD
We used a design-oriented study to investigate how nurses can build a therapeutic relationship. Through literature review, we searched for effective interventions. Additionally, four experts in the field of psychiatric nursing were interviewed to determine effective and appropriate approaches to create therapeutic relationships.

RESULTS
According to the literature and the interviews, three themes emerge to develop a good therapeutic relationship, namely: 1. Creating a beneficial climate by investing in contact. 2. Supervision to bear the emotional impact. 3. Increasing knowledge by continuous learning.

CONCLUSION
These themes are connected to practical instructions in a specifically for burns nurses designed toolkit, helping to shape therapeutic relationships from the first day of admission. It includes instructions on investing in contact, on paying attention to emotional impact on nurses, and training elements to increase knowledge in psychiatry. This toolkit will be added to the electronic patient record in order to integrate it into daily care.

O1.4.10

SkinTERM: Skin Tissue Engineering and Regenerative Medicine, a Marie Skłodowska-Curie Action

Daamen W[1,2], Hof D[1,2], Boekema B[2,3,4]
[1]Radboud university medical center, Department of Medical BioSciences, Nijmegen, The Netherlands, [2]SkinTERM, , , [3]Association of Dutch Burn Centres (ADBC), Preclinical Research, Beverwijk, The Netherlands, [4]Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Plastic, Reconstructive and Hand Surgery, Amsterdam, The Netherlands

Aim: The EU-funded innovative training network SkinTERM aims to convert the normal mode of skin repair into skin regeneration by delivering excellently and multidisciplinary trained scientists.

Methods: Current treatments of skin burns and large trauma have serious drawbacks, including pain, mobility-limiting contractures and disfiguring scars. We aim to induce skin organogenesis by key extracellular matrix elements taken from foetal and non-scarring spiny mouse systems, and by employing cells from relevant cellular origins. Furthermore, we investigate methodologies to regenerate skin appendages and take initial steps for clinical translation.

Results: Experiences from the SkinTERM network will be shared, where a solid training program is combined with innovative skin regeneration research.

Regenerative components, including type III collagen and elastin hydrolysates, were applied to construct and characterize three-dimensional collagen biomatrices. Collaborative proteomics and transcriptomics studies of the spiny mouse and human foetal/adult/eschar fibroblasts have started. A human skin organoid model was established to study fibroblast lineages and to propagate sweat gland stem cells. Hair proto-follicle dermal cell cultures were applied in bilayered 3D spheroids. The first protocol for a melanocyte-containing skin construct was designed.

Conclusions: The training and cutting-edge research output from SkinTERM will deliver supradisciplinary and intersectorially trained scientists with knowledge regarding a wide variety of aspects in wound regeneration, necessary to drive this research area further towards clinical translation.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 955722.

O1.4.11

The importance of checklist for patient safety

Cederle N[1], Romani E[1], Bussola M[1]
[1]Azienda Azienda Ospedaliera Universitaria Integrata Di Verona, Verona, Italy

Aim:
Constant innovation and development in modern medicine is becoming more demanding for professionals to carryout and memorize all the work steps. We hypothesized that the introduction of the checklist as simple and reliable tool could help to avoid errors and improve inter professional exchange.

Methods:
Enzymatic debridement was introduced in Burn Unit in 2017. After initial training and organizational changing we established our checklist for enzymatic debridement procedure. To provide better information for whole team, we divided it in four parts; medical prescription, consent to treatment and dosage, patient preparation, and application and product removal. On the basis of first year experience we realized that it was mandatory to select a team leader for every step of the procedure. It was a novelty which has strongly influenced interdisciplinarity and interprofessionality in our team. The allocation of different work steps between numerous specialities and disciplines has supported various approaches and agreements permitting the transfer of responsibility. All that lead to better team cohesion. In 2022 as a result of staff turnover there was an adjustment of the same through a training course on the field and revision of the AIFA information notes.

Results:
From February 2017 we have managed 127 adult patients from 18 to 88 years with a percentage of TBSA from 7 to 65%. All checklists have been compiled in real time and no critical issues have emerged.

Conclusions:
Creation of the checklist has allowed to avoid mistakes and reduce risks ensuring the safety of the burned patient.

O1.4.2

Effects of a Nurse-led Aftercare Telehealth Program of Adult Burn Survivors: A Pilot Randomised Controlled Trial

Bayuo J[1], Wong F[1]
[1]The Hong Kong Polytechnic University, Hung Hom, Hong Kong

Aim: To examine the effects of a newly developed aftercare telehealth program on quality of life, sleep, pain, itchiness, scarring, psychological and physical role functioning for adult burn survivors in Lanzhou, China.

Methods: A prospective, two-arm, pilot randomised controlled approach was employed. Sixty (60) adult burn survivors, aged ≥18 years were randomly allocated to either the control or treatment group with 30 participants per arm. Participants in the intervention group received an 8-week aftercare support coordinated by burn care nurse case managers. The program comprised of two phases: pre-discharge and follow-up phase delivered via WeChat app following discharge. Quality of life was the primary outcome and secondary outcomes included sleep, pain, itchiness, scarring, psychological and physical role functioning. All outcomes were evaluated at three time points: T0 (baseline), T1 (immediate post-intervention at 8 weeks), and T2 (4 weeks from T1). Generalised Estimating Equation was employed to ascertain group, time, and interaction effects.

Results: Statistically significant higher scores regarding quality of life ($p = 0.015$), HADS-Depression ($p = 0.013$), HADS-Anxiety ($p = 0.023$), total HADS ($p = 0.009$), and physical role functioning ($p = 0.041$) were observed at T1 and T2. No statistically significant findings were observed regarding sleep, scarring, and itchiness.

Conclusion: Aftercare support is central to the post-burn recovery process, and it is possible to deliver this support on locally available telehealth platform. The mean scores however highlight a need to extend the program in the long-term considering the chronicity associated with the post-burn recovery process.

O1.4.3

The standard process and safety care burned patients at university hospital Vall d'Hebron

Villanueva Montero E[1], Miguel Puigbarraca P[1], González Gilarte L[1], Aguayo-Álvarez M[1], Tabernero Gallego R[1]
[1]Ics, Barcelona, Spain

AIM
To improve the patient care process at the burns unit of Vall d'Hebron to achieve a high quality care and provide an adequate clinical safety to the patient during their healthcare process.

METHODS
A team of 24 burn unit professionals from different categories was created. They carried out a 33 hours analysis to check the present circuits at burn's area. The analysis was done under the supervision of a process manager expert nurse and following the Lean methodology. In addition, adult and paediatric patients explained their experiences to be analysed in order to find out their point of view. Six different circuits were detected within the burn patient care process: emergency, critical, surgical block, hospitalisation, outpatient care and rehabilitation. Finally, different work lines were identified, some actions were prioritised and their implementation started .

RESULTS
146 lines of improvement were detected, 46 of which were prioritised and planned. Safety was one of them. Different professionals of the unit handled the following items: awareness and set-up of alarms, quick answer of patient calls, security rounds and encouraging notification of near miss, no harm incident or harmful incidents. The safety culture has increased.

CONCLUSIONS
Following a standardised methodology to analyse the burned patients process has allowed the prioritisation and implementation of improvement lines. All the workers' involvement at establishing good care practices, is consolidating the safety culture increasement and strengthening new work dynamics. As a consequence, the communication between the staff has increased and so has the patient's quality experience.

O1.4.4

Use of immersive virtual reality to pain and anxiety control in burned patients

Puigbarraca P, Villanueva Montero E[1], González Gilarte L[1], González López M[1], Sánchez Garcia M[1]
[1]ICS, Barcelona, Spain

Aim: Reduce pain and anticipatory anxiety levels on adult and pediatric admitted patients at Vall d'Hebron Hospital Burns Units during dressing changes through immersive virtual reality sessions.

Method: We started a study to assess patient satisfaction after the use of virtual reality for wound care. We evaluated the level of anxiety and pain prior, during and after the dressing change. Nursing staff performed different duration sessions of immersive virtual reality with the use of virtual reality glasses on adult and pediatric patients in routine cures, cures for staple removal and complex cures.

Result: With the use of virtual reality, cleansing the wounds and changing the burns dressing is less annoying and anxious as reported by the patients. This results in a decrease in the use of painkillers and anxiolytics prior to the dressing change.

Conclusion: The use of virtual reality glasses as a non-pharmacological measure in pediatric and adult patients, seems to be useful for pain and anxiety control in our routine care. It is necessary, however, to continue with data collection to complete the study and be able to analyze the results in order to create a new protocol to use this technique.

O1.4.5

Training Nurses to Improve Burn Care in Africa

Chiumia Z[1]
[1]Queen Elizabeth Central Hospital, Blantyre, Malawi

Introduction
Burn injuries in Malawi, contribute greatly to morbidity and mortality (Samuel J.C et al). One of the major factors is poor management (Kasenda S. et al), which is a result of the lack of trained nurses in burn care. There is an urgent need to train nurses to promote and disseminate quality care for burn patients. There is an approach that succeeds in improving the quality of burn nursing in low resource settings and creating leaders to disseminate the approach, outlined below.

Personal Interburns time-line
2017 – Participant in Advanced Burn Care (Nursing)
2019 -2020 – Participant in Implementation Science for Nurses: A Quality Improvement Project
2019 – Essential Burn Care (EBC) Trainer of Trainers (ToT)
2019/2022 – Faculty member ABC (Nursing) Ethiopia and EBC Mwanza, Tanzania
2023 – Course Lead, ABC (Nursing) Dar es Salaam

Benefits and Achievements
This timeline, from participant to course lead resulted in an increased knowledge and skills in burn care for instance the aseptic technic in wound dressing, and improved burn nutrition leading to the reduction of burn mortality from 26% to less than 10% in our unit. The knowledge and skills increased the level of confidence in the execution of patient care and leadership.

Challenges
The frequent rotation of burn trained nurses results in the loss of valuable resources within the Burn Unit and compromises the quality of patient care.

Way Forward
To train more nurses in East Africa and build up complete training faculty in burn care to enhance care.

O1.4.6

Reliability and validity of a frailty assessment tool in specialized burn care, a retrospective multicentre cohort study

Cords C[1,2], van Baar M[1,3], Nieuwenhuis M[4,5,6], Pijpe A[7,8,9], van der Vlies C[1,2]
[1]Association of Dutch Burn Centres, Maasstad Hospital , Rotterdam , The Netherlands , [2]Trauma Research Unit Department of Surgery, Erasmus MC, Rotterdam, The Netherlands , [3]Department of Public Health, Erasmus MC, Rotterdam, The Netherlands , [4]Association of Dutch Burn Centres, Martini Hospital, Groningen , The Netherlands , [5]Hanze University of Applied Sciences, Research Group Healthy Ageing, Allied Health Care and Nursing, Groningen , The Netherlands , [6]University of Groningen, University Medical Centre Groningen, Department of Human Movement Sciences, Groningen, The Netherlands , [7]Association of Dutch Burn Centres, Red Cross Hospital, Beverwijk , The Netherlands , [8]Amsterdam UMC location Vrije Universiteit Amsterdam, Plastic, Reconstructive and Hand Surgery, De Boelelaan 1117, Amsterdam , The Netherlands , [9]Amsterdam Movement Sciences, Tissue Function and Regeneration, Amsterdam , The Netherlands

Aim: To assess the Canadian Study of Health and Aging Clinical Frailty Scale (CFS) inter-rater reliability and validity (predictive validity, known group validity, and convergent validity) in patients with burn injuries in specialized burn care.

Methods: A retrospective multicentre cohort study was conducted in specialized burn care. Patients aged ≥50 with burn injuries and a primary admission in 2015-2018 were included. A research team member retrospectively scored the CFS. Inter-rater reliability (IRR) was calculated using Krippendorff's α. Validity was assessed using logistic regression analysis. Patients with a CFS ≥5 were considered frail.

Results: In total, 540 patients were included. Mean age was 65.8 years, and mean TBSA burned was 8.5%. Mean CFS was 3.4(SD 2.0). According to the CFS, 28% of all patients were frail. The CFS's IRR was adequate (Krippendorff's α=0.69, 95%CI 0.62-0.74, n=212). Positive CFS was predictive of adverse outcomes, including non-home discharge (OR=3.57, 95%CI 2.16-5.93), higher in-hospital mortality, and mortality <12 months post-discharge (OR=3.05 95%CI 1.06-8.77 and OR=4.61, 95%CI 1.99-10.65), after adjustment for age, TBSA, and inhalation injury. Frail patients were more likely to be older (OR=2.88, 95%CI 1.95-4.25) and have more severe comorbidities (OR=6.43, 95%CI 4.26-9.70). The CFS was significantly related (rSpearman=0.55) to the Dutch Safety Management System frailty screening, indicating a fair-good correlation between the two scales.

Conclusion: The CFS is reliable and has shown its validity, including its association with adverse outcomes in patients in specialized burn care. The CFS could be considered for early recognition and treatment of frailty.

O1.4.7

Introduction of a academic online uk regional Advanced Burns Module

Lee N[1], Martin N
[1]Chelsea And Westminster, London, United Kingdom

Aim - Introduction of a regional online academic Advanced Burns Module would improve and standardise education across a region enabling improved access to a burns academic module.

Methods - In partnership with University of East Anglia regional release of an online Advanced Burns Module in May 2022 to the London and South East Burns Network MDT. Course designed around the journey of patient from admissions through to discharge and follow up with 6 online study days taught from MDT professional from across region. Course Competencies, weekly MCQ tests and a student service improvement project were agreed assessment criteria.

Results - Pilot group May 2022 received great feedback, second module September 2023 with introduction of overseas student, third module January 2023 saw students from further than the region and another overseas student. Over first academic year 36 students completed the module overall feedback was positive, junior staff enjoyed the mix of course leads and MDT teaching from across different services. Development of POD casts, case studies and increasing up to date content continues with new new research and student feedback.

Conclusion - Bringing together regional, national and international students on to the same module opens greater depth discussions and learning in relation to the care of our burn survivors. Enabling module online reduces cost allowing educational training budgets to send more students increasing overall burns trained workforce. Continued development of module and introduction of military students are next steps for development of a sustainable module.

O1.4.8

Monocyte-, lymphocyte- and neutrophil extracellular traps are present in the dermal microvasculature of burns wounds and coincide with a procoagulant phenotype

Van Der Leeden B[1,2], Korkmaz H[3,4,5], Boekema B[3,4], van Zuijlen P[3,4,7], Niessen H[1,6], Gibbs S[5], Krijnen P[1,6]
[1]Department of Pathology, Amsterdam UMC, Amsterdam, Netherlands, [2]Amsterdam Infection and Immunity, Amsterdam UMC, Amsterdam, Netherlands, [3]Association of Dutch Burn Centers, Beverwijk, Netherlands, [4]Department of Plastic, Reconstructive and Hand Surgery, Amsterdam, Netherlands, [5]Department of Molecular Cell Biology and Immunology, Amsterdam, Netherlands, [6]Amsterdam Cardiovascular Sciences, Amsterdam, Netherlands, [7]Red Cross Hospital, Beverwijk, Netherlands

Aim
This study aimed to investigate the presence of monocyte extracellular traps (METs), lymphocyte extracellular traps (LETs) and neutrophil extracellular traps (NETs) in the burn wound coinciding with the local pro-coagulant phenotype in the microcirculatory endothelium after burn injury.

Methods
Eschar was operatively obtained from burn wound patients (n=21) with a mean total body surface area (TBSA) burned of 29%. Herein, the coagulation factors i.e. tissue factor (TF) and factor XII (FXII) together with the endothelial cell marker CD31 were studied using immunohistochemistry. The presence of NETs, METs and LETs was analyzed using immunofluorescence. For this CD31 and the extracellular trap (ET) marker histone 3 citrullin were combined with immune cell markers for monocyte-, lymphocyte- and neutrophil extracellular traps: CD14 (METs), CD45 (LETs) and myeloperoxidase (MPO: NETs).

Results
Increased expression of TF, FXII and CD31 positive thrombi was found intravascular in all eschar samples compared to uninjured skin. Neutrophils were the most predominant cell type of the immune cell infiltrate in eschar. NETs, METs and LETs were found in the lumen of the dermal microvasculature in the eschar tissue 7 up to 40 days post-burn. The presence of NETs was the most predominant, and significantly correlated to coagulatory factors TF and FXII and the percentage of CD31 positive thrombi in CD31+ vessels.

Conclusions
This study shows that ETs are present in the microcirculation of burn wounds and coincide with increased CD31 positive thrombi, FXII and TF expression that may contribute to the hyper-coagulatory state after burns and burn wound conversion.

O1.4.9

The Effect of Simulation-Based Training on Caregivers of Burn Patients' Preparedness of Care and Caregiving Burden

Karahan S[1], Tuncbilek Z[2]
[1]Harran University, Sanlıurfa, Türkiye, [2]Hacettepe University, Ankara, Türkiye

Aim: The research was carried out to determine the effect of the discharge training given with the scenario-based simulation method on the care readiness and caregiving burden of the home caregivers of burn patients.

Method: The study was conducted as a randomized controlled study. The sample of the study consisted of caregivers of 60 burn patients. In the study, the participants were assigned to the groups by the block randomization method. In the implementation of the study, standard discharge training was given to the caregivers in the control group, and a booklet was given before discharge. Simulation-based training was given to the simulation group after the standard training. The Preparedness for Caregiving Scale(PCS) was applied to all participants before and after the training. One month and three months after discharge, the Caregiving Burden Scale(CBS) was administered.

Results: There was no significant difference between the two groups in terms of socio-demographic data. While there was no statistically significant difference in terms of the PCS scores of the caregivers before the training, it was found that the mean score of the simulation group after the training was statistically significantly higher ($p<0.05$). The CBS score was higher in the control group in the 1st and 3rd months after discharge than in the simulation group ($p<0.05$).

Conclusions: It has been determined that simulation-based discharge training is more effective than standard training in preparing caregivers for care and reducing the burden of caregiving. It is recommended that simulation-based training be used in discharge training.

O1.5.1

The value of intravascular volume measurement by transthoracic echocardiography in fluid resuscitation of children with major burns

Demir S[1], Sayin S[2], Cayhan S[1], Ece İ[2], Senel E[3]
[1]University Of Health Sciences, Ankara Bilkent City Hospital, Children Hospital, Department of Pediatric Surgery, Pediatric Burn Center, Ankara, Turkiye, [2]University of Health Sciences, Ankara Bilkent City Hospital, Department of Pediatric Cardiology, Ankara, Türkiye, [3]Ankara Yildirim Beyazit University, School of Medicine, Department of Pediatric Surgery, Ankara, Türkiye

Aim: Transthoracic echocardiography (TTE) is a non-invasive, and reliable diagnostic tool for evaluating hemodynamic parameters related to myocardial dysfunction and intravascular volume status. Our study aims to determine the predictive value of TTE in managing fluid resuscitation in children with major burns.

Methods:
Forty patients (TBSA>20%) were included in the study. They were divided into two groups (n=20), TTE (TG) and control group (CG). Initial fluid resuscitation was started according to Galveston formula. Follow-up in CG was performed according to vital signs, body-weight, and urine output. In addition, in TG, cardiac functions and the diameter of inferior vena cava (IVC Min-max), IVC collapsibility index (IVCCI), the descending aorta (Ao) diameter, the ratio of IVC/Ao was evaluated. Additional fluid was given to patients IVC/Ao ratio <0.8, while fluid was decreased in patients with IVC/Ao ratio >1.2. It was not changed in patients with a normal IVC/Ao (0.8-1.2).

Results: While the IVC/Ao ratio was low in 8 (40%) patients in TG, it was high in 3 patients (15%). During the follow-up, 10% of the TG and 60% of the CG needed diuretic treatment ($p<0.05$). No difference was found between the mortality rates of both groups.

Conclusions: Vital signs and urine output may not always reflect the actual volume status of patients with major burns. Our study showed that IVC/Ao ratio could effectively evaluate intravascular volume in burn patients for whom fluid resuscitation is critical. As a non-invasive and safe tool, TTE could be routinely used in fluid management in burn patients.

O1.5.10

Evaluation of factors related to early acute kidney injury in atients with severe burns admitted to burn intensive care unit

Rimaz S[1], Rimaz S[2], Ashraf A[3], Mobayen M[4], Roshanfar S[5]
[1]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran, [2]Anesthesiology Research Center,Department of Anesthesiology,Guilan University of Medical Sciences, Rasht, Iran, [3]Clinical Research Development Unite of Poursina Hospital,Guilan University of Medical Sciences, Rasht, Iran, [4]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran, [5]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran

Aim: In this study, we aimed to investigate the incidence of early AKI and factors associated with early AKI in patients with severe burns.

Methods: This retrospective cross sectional study was performed on burn patients with TBSA ≥ 20% between March 2016 and November 2020. KDIGO criteria were used to define early AKI in the first 5 days of hospitalization. Multivariable logistic regression was used to model association between baseline risk factors and risk of AKI.

Results: Of the 194 patients included the mean age of the subjects was 42.99±17.58. 138 patients (71.1٪) were male. The mean TBSA% was 49.18±24.71. According to KDIGO criteria, 43 patients (22.2٪) developed early AKI during the first 5 days of hospitalization as follows: Stage I(12.4٪) 24 patients, Stage II (7.2٪) 14 patients,Stage III(2.6٪) 5 patients. 85 patients (43.8٪) died.Patients who developed AKI had more age,mechanical ventilation and ICU stay days,sepsis, Baux score, and modified Baux score and mortality rate when compared to those patients who did not develop AKI(P=0.001). Multivariable logistic regression demonstrated association between AKI and the following variables: gender (OR = 2.872, P = 0.032), age (OR = 1.047, P = 0.000), TBSA %> 60٪ (OR = 6.134, P = 0.001) are independent risk factors for developing early AKI. Our study also showed that TBSA% significantly increases the severity of AKI.

Conclusions:The results of this study showed that early AKI is common in patients with a major burn injury. Age, gender and TBSA% are the strongest independent predictors of early AKI.

O1.5.11

Intubation and extubation criteria of patients with burn injury

Koh E[1], Concannon E[1], Solanki N[1], Wagstaff M[1], Greenwood J[1]
[1]Royal Adelaide Hospital, Adelaide, Australia

Aim
This study reviewed indications for intubation compared with internationally accepted criteria (ABA/Denver criteria), duration of intubation, and complications arising from intubation of burn patients treated at the Royal Adelaide Hospital (RAH) burns unit between 2017-2020.

Methods
Burn patients who were intubated on arrival to the RAH or in a pre-hospital setting were identified using the BRANZ database. Indications for intubation were compared to the ABA and Denver criteria. Data was collected pertaining to patient demographics, burn characteristics, and nasendoscopy/bronchoscopy findings.

Results
62 patients were identified with a mean total body surface area of 17.8%. 74-91% of patients met ABA and Denver criteria. The most common reason for intubation was singed facial hair or extensive facial burns. 58% of patients were intubated pre-transfer, 61% in the pre-hospital setting. Ventilator associated pneumonia developed in 22.5% of patients, 93% of whom were intubated for more than 48 hours. 52% of patients were extubated within 48 hours.

Conclusions
Most adult patients with burns admitted to the RAH are intubated as per published criteria. However, over half of the patients were extubated within 48 hours, suggesting potentially avoidable intubation. This study supports the sentiment that current intubation criteria may over-estimate the risk of airway compromise. Early nasendoscopy/bronchoscopy may be useful in determining patients who can be safely extubated in less than 48 hours.

O1.5.2

Inhalation injury - is there always an indication for treatment in an intensive care unit? Use of scintygraphy –modern metod of diagnosis inhaltion injuries.

Strzelec P[1], Wróblewski P[1], Ziółkowska K[1], Trzaska M[1], Kalemba M[1]
[1]Dr. Stanisław Sakiel Centre For Burn Treatment In Siemianowice Śląskie, Siemianowice Śląskie, Poland

Aim: The thermal injury may be concomitant or isolated injury to both the upper and lower airways. In such cases, the question always arises whether a patient should be intubated and if so, when?

Methods: A review of the literature on inhalation injuries does not exhaustively answer that question. There are no unambiguous procedures and individual centers or countries have their own procedures for the management of confirmed or suspected inhalation injury.

Results: The vast majority of studies have proven that early intubation of a burnt patient is in many cases unnecessarily performed and the risk of complications associated with mechanical ventilation increases significantly. One of the most effective methods of assessing the presence of an inhalation injury is still bronchoscopy, which in the case of lung parenchyma burns is not able to assess its extent, and the number of centers where it is possible to diagnose this type of inhalation injury with the use of scintigraphy is very limited.

Conclusions: Depending on the area of injury, the depth of the burn and the presence of symptoms of respiratory failure, it is recommended to intubate or monitor the patient and adopt a waiting attitude while implementing bronchodilators, anti-oedematous treatment, oxygen therapy or using hyperbaric oxygen. Each patient with suspected thermal injury or due to the location and depth of the burn is at risk of respiratory failure should be consulted by an anesthesiologist.

O1.5.3

Microsurgical Reconstruction of Burned Patients at the Traumatology Hospital “Dr. Victorio De La Fuente Narváez” IMSS, Mexico.O1.5.3

Ponce Franco D[1], Paralta D[1], Granados Martínez R[1]
[1]Hospital de Traumatología y Ortopedia "Dr. Victorio De La Fuente Narvaez" IMSS, Ciudad De México, Mexico

Aim: Description of the microsurgical reconstruction techniques performed in the last 9 years in a specialized Burn Unit in Mexico.

Methods: Retrospective and descriptive study of the cases of microsurgical reconstruction performed in the last 9 years in the Burn Unit of the Traumatology Hospital "Dr. Victorio de la Fuente Narváez” and presentation of the results of each technique performed.

Results: 15 microsurgical flaps were performed for reconstruction of wounds due to burns, as well as correction of scar sequelae, of which a survival rate of 86.6% is reported. The diversity of microsurgical techniques used and the different anatomical areas reconstructed are presented below:

3 Anterolateral thigh (ALT) flaps for retractable neck scar.
1 Lateral Brachial flap for the middle third of the face.
1 Radial Flap for bloody area in skull.
1 ALT flap for skull wound.
1 Radial flap for Penile reconstruction.
2 ALT flaps for foot reconstruction.
2 Medial plantar flaps for hand reconstruction.
1 Latissimus Dorsi flap for reconstruction skull wound.
2 ALT flaps for hand reconstruction.
1 SIEA flap for retractable neck scar.

The preoperative and postoperative photographic comparisons of the reconstructed patients will also be presented.

Conclusion: Reconstruction of special areas in burn patients is one of the most complex challenges facing the plastic surgeon today. Microsurgical techniques are currently still extraordinary tools for this purpose and in specialized centers the success rate is quite reasonable.

O1.5.4

The effects of burn-specific venous thromboembolism (VTE) prophylaxis guideline on outcomes and peak anti Factor Xa Levels of patients with burns >20% TBSA

Holden D[1,2], Singer Y[1], Bortz H[1], Selanayakam S[1]
[1]Alfred Health, Melbourne, Australia, [2]Monash University, Melbourne, Australia

AIM:
1. Monitor the incidence of VTE events and the subsequent complications of being anti-coagulated
2. Assess adherence with the severe burns VTE prophylaxis guideline
3. Monitor patients anti Factor Xa (AFXa) in patients >100gs or BMI > 30 to quantify the therapeutic adequacy of VTE prophylaxis

Methods:
- Prospective observational cohort study
- All patients admitted with severe burns >/=20%TBSA to the Victorian adult burns service between January 2022 and January 2024 will be eligible for inclusion in this study. 40-60 patients will be included in this study.

- Efficacy of this prophylaxis guideline will be evaluated by prospectively recording rates of VTE events. Complications arising from enoxaparin administration will also be collected including bleeding/haematoma development requiring an intervention and adverse drug reactions.

- Anti-Factor Xa (AFXa) levels
To quantify the therapeutic adequacy of the LMWH VTE prophylaxis guideline for all patients who weigh >/=100kgs or have a BMI >/=30kg/m2, laboratory monitoring of patients AFXa activity will be measured after 3 or 4 doses of enoxaparin, 4 - 6 hours after dose administration. (Target range is 0.2-0.5 IU/mL) Number of dose adjustments required to reach therapeutic adequacy will be recorded.

RESULTS:
Pending

CONCLUSION:
Pending

O1.5.5

Predicting blood loss in burn excisional surgery

Gigengack R[1,2], Taha D[3], Kuijper M[4], Koopman S[3], van der Vlies C[5]
[1]Burn Center, Maasstad Hospital, Rotterdam, the Netherlands, [2]Departments of Intensive care and Anesthesiology, Amsterdam UMC, Amsterdam, the Netherlands, [3]Departement of Anesthesiology, Maasstad Hospital, Rotterdam, the Netherlands, [4]Maasstad Academy, Maasstad Hospital, Rotterdam, the Netherlands, [5]Departments of Trauma and Burn surgery, Maasstad Hospital, Rotterdam, the Netherlands

Aim:
Blood loss during burn excisional surgery remains an important factor as it is associated with significant comorbidity, mortality and longer length of stay. The goal of this study is to investigate blood loss and develop a prediction model to identify patient at risk for blood loss.

Methods:
This retrospective study included adult patients undergoing burn excisional surgery of ≤10% body surface area (2013-2018). Duplicates, missing data and delayed surgeries were excluded. Primary outcome was blood loss. A prediction model for per-operative blood loss (>250 ml) was built using a multivariable logistic regression analysis with stepwise backward elimination. Discriminative ability was assessed by the area under the ROC-curve in conjunction with optimism and calibration.

Results:
269 patients were included. Median blood loss was 50 ml (0-150) / % body surface area (BSA) and 0.28 (0-0.81) ml / cm2 excised. Blood loss of >250 ml was present in 39% of patients. The model can predict blood loss >250 ml based on %BSA excised, length of surgery and ASA-score with an AUC of 0.922 (95% CI 0.883 – 0.949) and an AUC after optimism correction of 0.915. The calibration curve showed an intercept of 0.0 (95% CI -0.36-0.36) with a slope of 1.0 (95% CI 0.78-1.22).

Conclusions:
Median blood loss during burn excisional surgery of is 50 ml / % BSA excised. However, a substantial part of patients is at risk for higher blood loss. The model can be used to identify patients at risk for significant blood loss (>250 ml).

O1.5.6

Comparison of Analog Methods versus a Portable 2D Application for Calculating Burned Body Surface: A Retrospective Study

Ruiz-Padilla J[1], Pantoja Gómez H[2]
[1]Plastic Surgery & Burn Unit, SMA, MX, [2]Centro Estatal de Cuidados Crìticos, Salamanca, Mx

Introduction: Accurately estimating the burned body surface is critical in the management of burned patients, as an overestimation of the burned area can lead to overhydration, which increases morbidity and mortality. Currently, analog methods are commonly used for estimating the burned body surface, but they are subjective, dependent on the observer's experience, and particularly inaccurate in pediatric and overweight patients.

Objective: This study aimed to demonstrate that a portable 2D application is more accurate in calculating the burned body surface than analog methods.

Methods: This retrospective study, years 2018-2019, reviewed the records of 150 burned patients from two specialized institutions. Only patients with complete records including the burned body surface spreadsheets and the method used for estimation were included in the study. The results obtained through the E-Burn application were compared with those obtained analogically during the pre-operative exploration.

Results: The study revealed an overestimation ranging from 5% to 60% in patients whose burned body surface was initially calculated analogically, compared to those calculated with the E-Burn application ($p<0.05$, Student's t analysis).

Conclusions: Accurately estimating the burned body surface is crucial in ensuring proper hydration of burned patients. Analog methods are subjective, dependent on observer experience, and particularly inaccurate in pediatric and overweight patients. Therefore, it is recommended to use 2D and 3D devices for estimating the burned body surface, such as the E-Burn application, to improve accuracy and minimize morbidity and mortality in burned patients.

O1.5.7

Documented nutritional therapy in relation to nutritional guidelines post-burn injury

Dimander J[1,2], Andersson A[1], Lindqvist C[3], Miclescu A[1,2], Huss F[1,2]
[1]Uppsala University, Uppsala, Sweden, [2]Uppsala University Hospital, Uppsala, Sweden, [3]Karolinska Institutet, Stockholm, Sweden

Aim
To evaluate documented nutritional therapy in relation to international guidelines for patients after burn injury.

Methods
A retrospective observational study at a burn centre in Sweden was performed. The patients enrolled in the study were admitted between 2017-2019, ≥18 years old, and in need of hospital care for ≥ 72 hours post-burn injury. The patients were divided according to total body surface area burnt (TBSA %) into minor burn injuries (TBSA < 20 %) and major burn injuries (TBSA ≥ 20 %). Documented treatment was compared to 24 nutritional therapy recommendations. The documented nutritional therapy´s degree of adherence with nutritional guidelines was defined as high ≥ 80 %, moderate 60-79.9 %, or low < 59.9 %.

Results
Ninety patients with minor burn injuries and 44 patients with major burn injuries were included. Documented adherence to the nutritional guidelines was overall low. After minor burn injury, 8 % (2/24) of recommendations showed a high adherence to nutritional therapy guidelines, 17 % (4/24) a moderate adherence, and 75 % (18/24) a low adherence. Two items were documented as having high adherence in patients after major burn injury. Approximately one-fourth of the items in major burn patients (6/24) had a moderate adherence, and the remaining 67 % (16/24) of items were documented as having low adherence.

Conclusions
This study revealed low adherence to nutritional guidelines in patients treated post-burn injury. Given the disparity between guidelines and documented nutritional therapy there could be a considerable risk of inadequate nutritional therapy post-burn injury.

O1.5.8

Correlation of Body Mass Index on outcome in burn patients

Surowiecka A[1], Korzeniowski T, Pecka K, Torres K, Strużyna J
[1]East Center Of Burns Treatment And Reconstructive Surgery, Krasnystawska 52, Poland

Aim
There is an increasing number of obese patients in burn intensive care units (ICUs) and obesity is becoming an important problem in burn care. Obesity is often related to serious comorbidities that might affect the healing process, as well as they might predispose to lethal complications. Body Mass Index, BMI is not a perfect index to measure obesity and tissue composition of the body, however it is easy to evaluate and still recognized as a screening tool. The aim of the study was to verify the correlation of BMI on clinical parameters of burn patients.

Method
A total number of 201 patients admitted to the burn unit of the East Centre of Burns Treatment and Reconstructive Surgery between January 2019 and January 2020 was enrolled into the study. The exclusion criteria included age under 18, severe pemphigus, severe cutaneous adverse reactions, eg. toxic epidermal necrolysis.

Results
There were 149 patients enrolled into the study. LOS decreased by approximately 0.586 days with an increase in BMI by one unit, p=0.034. With an increase of BMI we observed a higher HGB at the admission, by a mean level of HGB by 1 unit, (p=0.044). At the discharge, higher BMI was correlated with a higher HGB level (p=0.001). the overweight subgroup had a lower level of phosphate difference (phosphates) by 0.7 units compared to patients with a normal BMI (p=0.006).

Conclusions
The ‘obesity paradox’ and the protective effect of a higher BMI.

O1.5.9

Factors associated with post-intensive care syndrome : a follow-up study in a military burn center

Donat N[1], RENNER J[1], BAUDIC T[1], LECLERC T[1], LAURENT M[1]
[1]Burn Center, HIA Percy, Clamart, France

AIM
ICU patients can develop late complications called post-intensive care syndrome (PICS). PICS is poorly characterized in Burn ICU (BICU) patients. A 3-month post-BICU consultation can help detect late complications and improve care practice and patient course. We used its observations to identify PICS-associated factors in our BICU.

METHODS
After ethical approval, data from 3-month post-BICU consultation were retrospectively analysed : burn severity, management features, early acute stress disorder (ASD) ; 3-month functional, pain and mental status (HAD and PCLS scores) ; specific complications, and quality of life (SF-12). Correlations were tested with chi-2 or Pearson as appropriate, and dependency of continuous variables on factors with linear regression models.

RESULTS
Over 50 months, 51 patients were analysed, mostly males (N=31, 61%), aged 43±16 years, with ABSI 7±2, median TBSA 20 % [IQR 13-32], length of stay 29.6 days [IQR 19-54] and 2 [IQR 1-3] surgical procedures. Post traumatic stress disorder significantly correlated with ASD and acute neuropathic pain. Anxiety and depression (HAD A & D > 11) were respectively observed in 16 and 8 % of patients, 28 patients (54%) only having no symptom. Physical and mental quality of life was overall good, respectively 45% [38-51] and 48% [39-53]). Only PCLS and HAD-D were inependently associated with SF-12 mental component. One out of three patients required specialist referral and treatment modification.

CONCLUSIONS
Despite ASD and neuropathic pain prevention, PICS is frequent after BICU and should be detected. Its mental components prevail (45%), apparently without correlation with burn severity.

O1.6.1

How early is the early management of deep periorbital burns

Kalinova K[1], Raycheva R[2], Uchikov P[1]
[1]Medical University, Plovdiv, Bulgaria, [2]Medical University, Plovdiv, Bulgaria

BACKGROUND: Deep periorbital burns are an important issue mainly due to the presence of the eyes in the region, and the crucial importance of preservation of vision. Recently the early approach to their surgical management progressively prevails over the conservative one. According to literature early surgery extends from the 3rd to the 18th day after the trauma, which is considerably wide a range for periorbital burn management.
The AIM of this study was to explore the right timing of early surgery of deep periorbital burns with view to the frequency and severity of early and late sequelae.

MATERIAL AND METHODS: A retrospective analysis of the treatment and outcome of 446 deep periorbital burns hospitalized in the Department of Burns of St George's University Hospital in Plovdiv, Bulgaria over 10 years was conducted.

RESULTS: Deep periorbital burns accounted for 74.8% of hospitalized deep facial burns. Concomitant ocular pathology was diagnosed in 14% (n=63) of the patients. An early, staged and precise surgical approach was favored. Follow up time ranged from 3 months to 5 years. Late ocular sequelae occurred in 7.4% (n=33) of the patients. There was no incidence of secondary corneal perforation or definitive loss of vision.

CONCLUSIONS: Timely and adequate treatment during the acute period can minimize initial damage and late sequelae. The early, balanced surgical approach aimed at rapid wound closure between day 2 and 10 post burn is most beneficial. Preservation of vision is a determining factor for the significance of trauma and the effectiveness of treatment.

O1.6.10

A novel skin grafting modality that significantly boosts efficiency: prefabricated large graft sheet of postage-stamp autografts and allografts to repair extensive deep burn wounds

Shen C[1], Zhang B[1], Liu X[1], Yuan H[1]
[1]Chinese People's Liberation Army General Hospital, Beijing, China

Aim: To introduce a novel grafting modality that makes intermingled transplantation of postage-stamp auto- and allografts, an excellent modality per se but has been limited to repair small residual wounds, now feasible to repair extensive deep burn wounds.

Methods: Allogeneic skin was cut into small postage-stamp grafts and laid on a sterilized plate with sites for autografts reserved according to the predesigned optimal layout. Then the patient's available autologous skin was harvested, cut up, and fitted into the reserved sites. After this, the grafts received a fine spray of biological adhesive before a single-layer absorbent gauze was gently pressed onto it to obtain a large sheet of evenly-laid grafts (hereinafter called the prefabricated-large-sheet) ready for use. A total of 21 operations using this modality were performed on 11 patients with extensive deep burns (86.27±8.82%TBSA; Ⅱ-Ⅳ degree) and the grafting time per unit area (10 cm×10 cm) was calculated to compare with that of conventional piece-by-piece grafting. Eventually the take rates of the two modalities were compared.

Results: The average time of prefabricated-large-sheet grafting and piece-by-piece grafting per unit area was (0.41±0.09)min and (7.46±1.07)min respectively and the difference is statistically significant($P < 0.001$). The average take rate of the large sheets was (85.43±6.14)% and that of the piece-by-piece transplanted grafts was (87.29±5.23)% and there is no significant difference($P > 0.05$).

Conclusions: The novel modality moves the laborious grafts-positioning process before operation, significantly reduces the intraoperative time and makes the intermingled transplantation of small auto- and allografts now feasible to repair extensive deep burn wounds.

O1.6.11

Benefits of using human keratinocyte allografts in older burn patients.

Lujan Alvarez G[1], Silva Saucedo I[1], Hernandez Valverde C[1], Zepeda Torres J[1]
[1]Plastic Surgery Department, UMAE Dr. Victorio de la Fuente Narvaez, Mexico City, Mexico

An older person is considered to be a person with a life time of 60 years and over. Burns in older adults are an important public health problem, due to the susceptibility to complications that these patients present. It is common for them to also suffer from concomitant diseases, malnutrition, and neglect by their relatives, which aggravates their situation and predicted. A serious burn in an older adult is considered to be one that affects 10% or more of their total body surface, involving a depth of the second degree deep, even more superficial that involves special areas. In the burn unit of the VFN Mexico City trauma hospital, we are carrying out an early management protocol both medical and surgical, and the use of cultured human keratinocyte allografts to comprehensively treat these patients. Keratinocyte allografts are a culture of human cells taken from the foreskins of newborns developed with tissue engineering. Allografts were used in the affected areas with a depth of second superficial degree, mixed areas with a superficial predominance and graft donor areas of Partial thickness in older adult patients with a diagnosis of severe mixed burns admitted to the burn unit in a One year period. The management protocol of early fluid resuscitation, antibiotic therapy, adequate nutrition and surgical cleansing was followed, in addition to the use

O1.6.2

Timing of Surgery in Acute Burn Care: a Dutch Retrospective Repository Study

Salemans R[1,2], van Uden D[1], Bosma E[3], van der Vlies C[2,4], Dutch Burn Repository group, the National Burn Care, Education & Research group the Netherlands
[1]Association of Dutch Burn Centers, Maasstad Hospital, Rotterdam, the Netherlands, [2]Trauma Research Unit, Department of Surgery, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands, [3]Department of Trauma and Burn Surgery, Martini Hospital, Groningen, the Netherlands, [4]Department of Trauma and Burn Surgery, Maasstad Hospital, Rotterdam, the Netherlands

Timing of surgery in acute burn care remains a topic of debate. Analysis of the current state of surgical timing is required.

Aim: The aim of this study is to analyse the timing of burn surgery in three Dutch burn centres in order to provide insights for future treatment decisions and research.

Methods: This retrospective study included adult patients with acute burns who underwent at least one surgical intervention in the three Dutch burn centres from 2009 to 2021. Data are derived from the prospective Dutch Burn Repository R3. Related factors to timing of surgery, including patient, injury, and treatment characteristics, are analysed. Clinical outcomes for early (≤7 days) and delayed (>7 days) surgery groups are described and compared, and trends over time are analysed.
Preliminary results: Preliminary results on approximately 3400 patients show a median time to first surgical intervention of 14 days. 19.8% of patients received their first surgery within 7 days post-burn. Tangential excision with knife appeared to be the most commonly used wound debridement method (65%), with meshed split skin graft being the most popular transplantation technique (80%). Mean number of operations, length of hospital stay, and mortality will be presented for early and delayed surgery groups. Complete data will be presented at the congress.

Conclusion: The Dutch burn centres have shown a focus towards delayed surgery. A better understanding of the relationship between surgical timing and outcomes will help in the development of evidence-based treatment strategies for burn patients in the Netherlands and beyond.

O1.6.3

Closing of mine-shrapnel combat defects of lower extremities with free and local perforator flaps

Rudenko O[1], Badiul P[1,2], Sliesarenko S[1], Buriak T[1], Sliesarenko K[1,2]
[1]Burn and Plastic Surgery Centre, Dnipro, Ukraine, [2]Dnipro state medical university, Dnipro, Ukraine

Aim:
Analysis of the results of plastic reconstruction of military injuries of cover and soft tissues on the lower extremities using free and local perforator flaps.

Methods:
The authors conducted a retrospective review of 139 flaps for 108 patients (103 men and 5 women) with mine-shrapnel and bullet combat injury treated in the clinic from 2014 to 2022.

Results:
In all cases, extensive wound defects were completely closed in one stage and the patients were discharged with recovery. Non-critical complications were in 8 cases (5,7%), additional care or secondary sutures were required. In 6 cases (4,3%), when we faced critical complications and flaps were lost, we extended plan B, which included the use of another type of perforator flap or skin graft. The treatment time was extended by 27 days.

Conclusions:
The authors' results reflect a high rate of successful reconstruction of military wound defects on the lower extremities using free and local perforator flaps. The presented methods demonstrates at the same time the possibility reconstruction of lower limb defects which based on the concept: "like to like" replace and minimize morbidity to the donor site, achieving the best possible aesthetic and functional outcome.
In most cases, perforator free and local flaps allows primary closure of a large defect in one stage on the thigh, in the area of the knee joint and lower leg in the absence of secondary defects characteristic of donor sites when choosing alternative techniques.

O1.6.4

Improving Burn Care: Lessons Learned from Treating the First 300 Patients with NexoBrid® Enzymatic Debridement

Bulla A[1], Aguirrezabala J[1], Rivas Nicolls D[1], Baena Caparrós J[1], Serracanta Domènech J[1]
[1]Hospital Universitari Vall D'hebron, Barcelona, Spain, Barcelona , Spain

AIM
The aim of this retrospective study was to evaluate our experience of the first 300 burn patients treated with NexoBrid®, a debridement agent based on Bromelain, a concentrate of proteolytic enzymes found in the stem of the pineapple plant.

METHODS
The first 300 patients treated with NexoBrid® at Vall d'Hebron Hospital in Barcelona were included in this study.
We collected data on patients' demographics, burn characteristics, need for surgery, time to healing, complications, and scar outcome.
The study was authorized by the Institutional Ethic Committee.

RESULTS
Between 2015 and 2021, 229 (76%) men and 71 (24%) women were treated with NexoBrid®. The median age was 41 (sd: 16), and the median TBSA burned was 8%. Flame burns caused 46.5% of the burns, deflagration 21.6%, boiling liquids 18.3%. Upper and lower extremities accounted for 64.6% of all treated areas, and face for 20%. Median treated area was 5%. Mean time to complete debridement was 1.2 days (sd:1.07), only 2.66% of patients needed escharotomies. Mean burned area treated was 67%. 59% of patients needed skin grafting. Infections were observed in 10% of patients, mostly by St. Aureus and Ps. Aeruginosa.

CONCLUSIONS
Our study confirms NexoBrid® as an effective treatment for burns, especially those caused by flames and localized in limbs and face. It significantly reduces the time to complete debridement, the need for graft surgery, and the need for escharotomies. These benefits can lead to better healing outcomes for burn patients.
However, the risk of post-NexoBrid® infections should be carefully monitored.

O1.6.5

Confirmation of our helpful hints for the treatment decision after enzymatic debridement with NexoBrid®

Claes K[1], De Decker I[1], De Coninck P[1], Verbelen J[1], Monstrey S[1]
[1]Ghent University Hospital, Ghent, Belgium

Aim
The wound bed evaluation after NexoBrid® removal and the corresponding treatment decision are prone to subjectivity and failure. The purpose of this study was to evaluate whether our helpful hints (clinical wound bed characteristics and laser Doppler imaging (LDI) flux values) were consistent with the treatment decision taken for a more recent population of burn patients(1).

Methods
All patients with one or more mainly LDI-blue regions of interest (ROI, healing potential<21d) treated with NexoBrid® (01/12/2019-01/08/2022) were included in this retrospective study.

Results
Thirty-seven patients (mean age 36y) had a NexoBrid® procedure for their 73 mainly LDI-blue ROI (mean surface area 54.3cm²). After NexoBrid® treatment, 28 ROI (38.3%) could be treated conservatively until complete reepithelialization, while 44 ROI (60.3%) needed autografting. One ROI (1.4%) was treated by a combination of both. Regarding the decision to operate: 4/20 patients (20%) with LDI flux values 145-200PU (LDI-light blue) had surgery, two of them had a 'step-off'; 41/53 patients (77%) with LDI flux values <145PU (LDI-dark blue) had surgery, 32 of them (32/41, 78%) had clinical signs (step-off, visible/translucent fat). The overall mean healing time for all ROI was 40.6d. Hypertrophic scarring (mean follow-up 395.9d) was only seen in 12 ROI (16.4%): 8 treated surgically and 4 treated conservatively.

Conclusion
The wound bed characteristics after NexoBrid® removal in combination with the LDI flux values of the ROI are still considered valuable tools for decision making. The experience of the rating physician can also not be underestimated.

(1) Claes et al., Burns, 2022

O1.6.6

Ex vivo model of a skin burn

de Buys Roessingh A, Applegate A, Raffoul W, Labouchère A
[1]CHUV, Lausanne, Switzerland

Purpose of the study
A burn model is important for testing new treatments. Currently, these models are created mainly on animals. For obvious ethical, anatomical and physiological reasons, these models should eventually disappear. We propose the creation of a burn model on human skin using a pulsed dye laser (PDL).

Methods
The excess abdominal skin of nine women was obtained following an elective breast reconstruction operation. Within one hour after surgery, burns were induced using a PDL on skin samples (595 nm), at different fluences (7 and 13 J/cm2), number of pulses (5-54) and duration (3 and 40 ms). A total of 53 burns were performed before being analyzed histologically. Skin samples were graded according to a newly created code: samples were inspected after 14 and 21 days to assess their ability to spontaneously heal and re-epithelialize.

Results
We have determined the parameters of a PDL inducing 1st, 2nd and 3rd degree burns on human skin. After 21 days, a neo-epidermis has formed.

Conclusion
Our results show that this simple, fast and user-independent process creates reproducible and uniform burns of different, predictable degrees, close to clinical reality. With fixed parameters, first, second and third degree burns were induced. In vivo models of human skin can easily replace animal testing, especially for large-scale screening. This model could be used to encourage the experimentation of new treatments on known degrees of burns and thus improve therapeutic strategies.

O1.6.7

Treatment of superficial and partial thickness facial burns using a nanocellulose face mask: first retrospective study

Casas Beltran J[1]
[1]Mexican Institute of Social Security, Hermosillo, Mexico

Aim
To evaluate clinical aspects (pain, re-epithelialization time, infection rates, long term scarring and complications) using nanocellulose face mask (Epicite hydro®) treatment for superficial and partial thickness facial burns

Material and methods
Records of patients attended for facial burns treated with nanocellulose face mask, analyzing demographics (age, sex, cause of burn, type of burn, and total body surface area) Measures of pain scale (Verbal Rating Scale 1-10), time of re-epithelialization and complications recorded. VSS (Vancouver Scar Scale) applied at 6 months. Exclusion criteria: infection prior to application and full thickness burns

Results
115 files of patients with facial burns treated with nanocellulose face mask were collected. 78% male, 22% female, median age 29 years (range 1 to 87 years), total body surface area 15% (range 1% to 50%), 94% 2nd degree burn, 6% 3rd degree burn (excluded). Cause of burns 78% fire, 16% scald, 3% chemical and 3% contact. The pain scale median was 2 (range 1-4), re-epithelialization mean time was 8 days (range 5 -14 days). No wound complications were registered including infections or allergies. Score for VSS was 0 (range 0–8)

Conclusions
The nanocellulose face mask (Epicite hydro®) demonstrates it can be safely used in face burns in all ages and all type of burns. Demonstrated that its use reduce pain, re-epithelialization time and prevent from infections. Helps improving quality of life after a burn injury to the face by preventing from hypertrophic scarring, which makes it a great novel treatment for facial burns.

O1.6.8

A decade since European approval of Bromelain based enzymatic burn debridement: Lessons learned

Shoham Y[1], Singer A[2], Krieger Y[1], Silberstein E[1], Goverman J[3]
[1]Soroka University Medical Center, Beer Sheba, Israel, [2]Stony Brook University, Stony Brook, New York, USA, [3]Mass General Hospital, Boston, MA, USA

Aim: The aim of this report is to review the literature published about NexoBrid® (NXB) enzymatic burn debridement since its initial approval in the European Union in December 2012, and provide an overview of the main lessons learned during the past decade.

Methods: We conducted a literature search using the terms “NexoBrid” and “burn enzymatic debridement” in Pubmed and Google Scholar, published during the decade between December 2012 to December 2022.

Results: After excluding industry-based trials, a total of 103 publications were found. The main issues reported in these publications include: the learning curve associated with use of NXB; treatment efficacy, including treatment of hands and faces; post debridement wound bed diagnosis and wound bed coverage; prevention and release of elevated compartment pressure; pain management; safety issues; cost efficacy; consensus guidelines; use during the COVID-19 pandemic; off label treatment, including use in children and large burns; potential implications in burn mass casualty events; and literature reviews. We comprehensively review these issues.

Conclusions: During the past decade more than 10,000 patients were treated with NXB around the world. This constitutes a great deal of knowledge learned, much of which has been shared with the scientific community in over 100 peer reviewed publications. It appears there is a substantial body of evidence supporting the safety and efficacy of NXB as a valid non-surgical eschar removal agent. We expect the recent approvals in various regions around the world, including the United States, will contribute to the continuing growth of this body of evidence.

O1.6.9

Long-term outcome after treatment of deep dermal to totally dermal burns with a polylactide-based matrix (Supra SDRM®) as dermal skin substitute with two-sided split skin coverage

Rapp M[1], Schappacher R[1], Liener U[1]
[1]Marienhospital Stuttgart, Stuttgart, Germany

Aims:
Previously established dermal skin substitutes are mostly of xenogeneic, animal, or allogeneic origin with risk of immunologic reaction or disease transmission. Timing for two-stage split-thickness skin coverage with currently known dermal substitutes is 14-32 days. To investigate the extent to which SupraSDRM® is suitable as dermal substitute.

Methods:
The polylactide-based matrix SupraSDRM® for guided wound healing is purely synthetic and hydrolytically resorbable. The bimodal foam-membrane structure promotes increasing cell migration, progressive vascularization and collagen deposition resulting in matrix remodeling with formation of dermal granulation tissue. Lactate degradation promotes angiogenesis and dermis formation and reduces inflammation and oxidative stress.

Results:
In 11 patients with mean age 62.7 y., 18% TBSA, ABSI 8, SupraSDRM® was applied on 22 sites after deep dermal&epifascial necrectomy or decortication on 5 different wound beds (fat, fascia, muscle, tendon, bone). Split-thickness skin grafts could be performed after mean of 14.4 days. So far, treatment courses of 37-579 days, mean 264.7 days, can be considered.
This showed extensive healing of split-thickness skin grafts with good displacement, no or little hypertrophic scarring or scar keloids, no significant shrinkage of scars, and good functional, mechanical, and aesthetic results.

Conclusions:
Progressive vascularization of SupraSDRM® with increasing cell migration results in matrix remodeling with formation of dermal granulation tissue, which can be covered with split thickness skin grafts in a two-step procedure. Long-term results show a good displacement of soft tissues, absent or only slight hypertrophic scar formation or scar keloids, as well as good functional, mechanical, and aesthetic results

O2.1.1

‘Systematic review on working mechanisms of signaling pathways in fibrosis during shockwave therapy’.

Demuynck L[1], Van Daele U, Van Breda E, Moortgat P, Meirte J
[1]University Of Antwerp, Research Group MOVANT, OSCARE, Organisation for Burns, Scar Aftercare and Research, Antwerp, België

Aim:
Fibrosis is typically characterized by scarring and hardening of tissues and organs. It can affect every organ system and so could results in organ failure. Previous studies suggest that mechanical forces (such as shockwave therapy, SWT) initiate a process of mechanotransduction and thus could regulate fibrosis. Nevertheless, it is largely unexamined which pathways exactly are involved in the application of SWT. For this reason, the present article seeks to elucidate the underlying effect of SWT on fibrosis.

Methods: A systematic research was conducted, this was achieved by gathering articles in three different databases: PubMed, Embase and Web Of Science. As a result, a total of 3363 articles about the research question were extracted.

Results: Preliminary evidence shows that SWT activates macrophage activity, fibroblast activity, collagen amount and orientation, TLR-3, TGF ß1/Smad, mTOR-FAK, YAP/TAZ and apoptosis. The included articles reveals that depending on the energy levels of SWT, other proteins and pathways can be activated. Moreover, different frequency levels can have an influence on other proteins and pathways.

Conclusion: These findings demonstrate that SWT has beneficial effects on fibrosis. Based on this data that highlights the underlying mechanisms we can make preliminary conclusions about the treatment modalities of SWT in scar formation, such as the energy levels and frequencies that are necessary to prevent or treat fibrotic tissue. The findings of this study have practical implications for the development of a more standardized SWT treatment.

O2.1.2

A pilot study of centralised collection of patient-reported outcome measures in a burns population in the Australian state of Victoria

Cleland H[1], Tracy L[2], Teague W[3], Gabbe B[4]
[1]Alfred Health, Melbourne, Australia, [2]School of Public Health and Preventive Medicine, Monash University , Melbourne, Australia, [3]Burns Service, The Royal Children's Hospital, Melbourne, Australia, [4]School of Public Health and Preventive Medicine, Monash University , Melbourne, Australia

Aim: The aims of this initial analysis are to quantify patient preference for telephone or online follow-up, and to compare response rates and data completeness at the 12-month time point based on follow-up method.

Methods: This is a prospective cohort study of patients recruited from those registered by the Burns Registry of Australia and New Zealand (BRANZ) over a 12- month period commencing in 2021. Participants were given the opportunity to complete the questionnaires by telephone interview or to self-complete the questionnaires via an emailed link.
Adults completed the Burn Specific Health Scale – Brief (BSHS-B), 5-D Pruritus Scale (5D) and 5-Level EuroQoL 5 Dimensions Questionnaire (EQ-5D-5L).
Paediatric patients (aged < 16 years) completed the Health Outcomes Burn Questionnaire (HOBQ), Children Burn Outcomes Questionnaire (CBOQ, and 5-Level EuroQoL 5 Dimensions Questionnaire (EQ-5D-Y) at 3, 6 and 12 months post-injury.

Results: 484 patients were approached and 450 consented to follow up, consisting of 423 adults and 27 paediatric patients. Most patients elected follow-up by telephone. The 12-month follow up rates were 81% (22/27) for children and 78% (321/410) for adults. More patients preferred and then completed follow up via telephone than email.

Conclusions:. Telephone follow-up is resource intensive, but results in higher follow up rates than email completion. However, data completeness was high at all timepoints. These results encourage us to examine options for sustainable incorporation of long-term follow-up data into routine registry data collection.

O2.1.3

Outcomes in the Dutch value-based healthcare burns core set: looking beyond the horizon

Van Uden D[1], Spronk I[1], Lansdorp C[2], van der Vlies C[1,3], The National Burn Care, Education & Research group the Netherlands[1,4,5]
[1]Association of Dutch Burn Centres, Maasstad Hospital, Rotterdam, the Nederland, [2]Amsterdam UMC location Vrije Universiteit Amsterdam, Department of Plastic Reconstructive and Hand Surgery , Amsterdam, the Netherlands , [3]Trauma Research Unit Department of Surgery, Erasmus MC, Rotterdam, the Netherlands , [4]Association of Dutch Burn Centres, Red Cross Hospital, Beverwijk, the Netherlands, [5]Association of Dutch Burn Centres, Martini Hospital, Groningen, the Netherlands

Aim: The Dutch burn care education and research program developed a value-based healthcare (VBHC) burns core set, consisting of outcomes and indicators that are important for burn patients, based on a national Delphi study. We assessed whether patient, healthcare professionals (HCP) and researchers views on the importance of outcomes differ between the subgroups in the different Delphi rounds.

Method: A three-round modified Delphi study, including 45 outcomes and 23 quality indicators, was conducted in the three Dutch burn centers. Items could be rated on a 9-point Likert scale ranging from unimportant to important. Rankings of the importance of outcomes were compared between different rounds and different subgroups.

Results: In the first round, ‘having a contact person’, ‘wound healing’, and ‘information on expected recovery’ were the top-three most important outcomes according to 27 patients, while ‘pain’, ‘physical activity’, and ‘self-care’ were rated most important by 63 multidisciplinary HCPs. Researcher views (n=23) were a mix of the other subgroups, with a top-three containing ‘pain’, ‘wound healing’, and ‘patient-reported questionnaires’. Top-three of the second round largely differed between the subgroups. Top-three ranked items of the third round were similar between patients and HCP, while researchers views deviated.

Conclusion: This study shows that patients, HCPs and researchers have an unique view on the most important burn care outcomes. Given the goal of VBHC is to learn from each patient by analyzing (patient-relevant) outcomes, it is crucial to include views of all parties involved, and to continuously discuss results as interpretation can change over time.

O2.1.4

The use of deep oscillation therapy for the treatment of mature burn scars: a pilot study

Sánchez J[1], Rivero M[1], Arancibia C[1], Van Daele U[2,3], Meirte J[2,3]
[1]COANIQUEM, Pudahuel, Chile, [2]University of Antwerp, Rehabilitation Sciences and Physiotherapy, Antwerp, Belgium, [3]Oscare, Antwerp, Belgium

Aim: To explore the treatment effect of Deep Oscillation therapy (DO) on the treatment of burn scars.

Methods: This is a pilot interventional study. Patients with mature burn scars were recruited, at least 2 years after injury. Scar elasticity and thickness were assessed using DermaLab Combo at baseline, after the intervention, and at 4 weeks follow-up. The intervention consisted of 5 treatments within 2 weeks with DO Evident®, (Physiomed, Germany). Treatment duration was 15 minutes using a combination of high frequency (160Hz, 8 minutes), intermediate frequency (60Hz, 4 minutes), and low frequency (20Hz, 3 minutes) modalities, according to the manufacturer's indications.

Results: Eight patients (age 13.6 ± 5.3 years), with mature burn scars (mean time from injury up to therapy 11,0 ± 6.1 years) were recruited. The median elasticity varied from 93.5% in the baseline to 96.0% after the intervention, (p=0.63). The thickness of burn scars varied from 1,343 µm to 1,165 µm after the intervention (p=0.14). The follow-up data showed that no further changes were observed. No adverse events or uncomfortable feelings in the scars were reported during the whole study period.

Conclusion: The use of DO did not lead to significant changes in flexibility or thickness at the end of the treatment. The intervention appears to be safe and well tolerated by patients. A randomized controlled trial recruiting burn patients at different scarring stages and evaluating the effectiveness of objective, subjective scar characteristics as well as patient-reported outcomes is warranted to assess the efficacy of DO therapy.

O2.1.5

The role of exercise in wound healing: Results of a feasibility study of exercise training.

Schieffelers D[1], Dombrecht D[1], van Breda E[1], Van Daele U[1,2]
[1]Department of Rehabilitation Sciences and Physiotherapy, Faculty of Medicine and Health Sciences, University of Antwerp, Antwerp, Belgium, [2]OSCARE, Organization for burns, scar after-care and research, Antwerp, Belgium

AIM
The catabolic and hyperglycaemic response to burn injury has been shown to interfere with wound healing. Conversely, anabolic and anti-hyperglycaemic interventions can considerably improve wound healing. Exercise is such an intervention strategy which is nevertheless underused in acute burn care. Resistance and aerobic exercise have traditionally only been administered after wound closure. The aim of this investigation was to study the feasibility and safety of a resistance and aerobic exercise programme during burn centre stay.

METHODS
Burned adults ≥10%TBSA received either standard care or additionally resistance and aerobic exercises, commenced as early as possible. Number of graft failures and feasibility, as the ratio of attempted to successfully completed exercise sessions, were analysed.

RESULTS
Fifty-seven subjects (51±15 years; 23±15% TBSA) were recruited, of which 28 underwent exercises for a median length of 22 days [IQR 15-31] with a mean exercise intensity of 7.9±1 on a 0-10 Borg scale of perceived exertion. There was no significant difference in graft failures between groups (exercise group: 2 failures in 1 subject vs. control group: 3 failures in 3 subjects, p=0654). Of 412 planned exercise sessions, 330 were successfully commenced (80% feasibility), and 264 were completed according to protocol (64%). Main causes for incomplete or failed sessions were surgery or postsurgical immobilization (60 sessions), and pain (44 sessions). Besides 5 episodes of dizziness and 1 episode of vomiting no adverse events occurred.

CONCLUSIONS
The early provision of resistance and aerobic exercise is safe and feasible. The potential benefits for wound healing should be investigated.

O2.1.6

Explorative study investigating burn survivors' perspectives on quality of care aspects

Thambithurai R[1,2], van Dammen L[3], van Zuijlen P[4,5], Van Loey N[1,6], The National Burn Care, Education & Research group the Netherlands
[1]Maasstad Hospital, Rotterdam, The Netherlands, [2]Erasmus University Rotterdam, Rotterdam, The Netherlands, [3]Dutch Burns Foundation, Beverwijk, The Netherlands, [4]Red Cross Hospital, Beverwijk, The Netherlands, [5]Amsterdam UMC , Amsterdam, The Netherlands, [6]Utrecht University, Utrecht, The Netherlands

Aim
Quality indicators are used to monitor and improve quality of care and for benchmark purposes. The perspectives of burn survivors, however, are not recognised in current sets of quality indicators while patient-centred care gains importance.
The aim of this study was to explore burn survivors' perspectives on quality aspects of burn care, and to translate their perspectives into patient-centred quality of care indicators.

Methods
An explorative qualitative study was conducted in a patient panel group. First, thematic analysis was applied to the focus groups to identify overarching themes. Second, patient-centred process quality indicators, informed by burn survivors' valued aspects of care, were defined.

Results
Ten burn survivors (mean age 48 years and mean %TBSA of 14%) participated in two focus groups. Four overarching themes were identified: 1) The importance of information tailored to the different phases of recovery, 2) The importance of significant others' wellbeing and involvement during the recovery, 3) The importance of therapeutic relationship and a low threshold access to healthcare professionals to ensure care continuity and 4) The importance to participate in decision making. Eighteen patient-centred process quality of care indicators within nine aspects of care were formulated. For example regarding the aspect pain assessment, 'was pain medication evaluated?'.

Conclusion
The overarching themes are reflected in patient-centred process quality indicators which present a broadened and complementary view on existing clinical quality indicators. Evaluating these patient-centred quality indicators may increase quality of care and may refine patient-centred care.

O2.1.7

Which physiotherapist takes care of the patient after discharge from the Burn Centre? Survey, by questionnaire, on the training of territorial physiotherapists in the treatment of burn patients

Galgani I[1], Bacchis M[1]
[1]Università di Pisa, , Italy

AIM
Given the need to continue physiotherapy treatment long after hospital discharge, it is necessary to know what training and experience territorial physiotherapists have in the treatment of scars and burns.

METHODS
A questionnaire consisting of 14 questions was developed: 6 questions referred to personal details, work setting and frequency of treatment of burns and scars; 5 questions to the assessment and treatment of scars; 3 questions to the training received and training perceived needs in burns and scars.
The questionnaire was sent by e-mail to physiotherapists of public and private institutions in Tuscany.

RESULTS
The questionnaire was sent to 63 physiotherapist. 62 of them, answered the questionnaire; 58.7% have been physiotherapists for more than 10 years. 82.2% of the respondents treat patients with scars "often" and "sometimes" compared with 55.6% who have been trained on "scars", "burns" or "both". Assessment and treatment differ widely among the respondents, but 82.5% believe they need further training on 'scars', 'burns' or 'both'.

CONCLUSIONS
The analysis shows that in spite of the high percentage of territorial physiotherapists taking care of patients with scars, assessment and treatment differ greatly from practitioner to practitioner. Training therefore becomes essential in order to guarantee quality and homogeneous physiotherapy for patients throughout the territory.
In the future, it would be interesting to structure training courses from the Burn Centre to territorial staff and to verify their effectiveness.

O2.1.8

The reliability and validity of elasticity and colour measurements in surgical scars.

Demuynck L, Van Daele U, Van Breda E, Meirte J
[1]Research Group MOVANT, Department of Rehabilitation Sciences and Physiotherapy, Antwerp, België

PURPOSE: To examine the reliability and validity of the Cutometer and Mexameter in the measurement of respectively elasticity and redness of surgical scars.

METHOD: Participants with linear surgical scars of minimally 2 cm long and between 2 weeks – 8 months old, were enrolled in this study. 32 participants (12 male; 20 female) were enrolled, aged 19-73 years (mean 40.91 ± 17.66) with scars on various locations for instance knees, backs and hands. The participants were asked to come to Antwerp University for the measurements of the scars. After filling in the informed consent and questionnaires (patient information and POSAS), the measurements with the Cutometer and Mexameter were performed by 2 researchers.

RESULTS: The intra-rater reliability of colour measurement with the Mexameter is excellent (ICC> 0.9), the inter-rater reliability of colour measurement with the Mexameter ranges between fair and excellent (ICC=0.5-1). The inter-assessor reliability of elasticity measurement with the Cutometer is good to excellent (ICC= 0.6-1). No correlation was found between OSAS and colour or elasticity measurements.

CONCLUSION: The Cutometer and Mexameter are reliable and objective scar assessment tools to evaluate linear scars and the healthy skin. These devices are suitable for follow-up measurements.

O2.2.1

An in silico modeling approach to understanding the dynamics of the post-burn immune response.

Korkmaz H[1,2,3,4], Sheraton V[5,6], Pijpe A[1,3], Boekema B[1,4], de Jong E[7], Papendorp S[7], Middelkoop E[1,4], Sloot P[5,8], van Zuijlen P[1,3,9]
[1]Department of Plastic Reconstructive and Hand Surgery, Amsterdam Movement Sciences (AMS) Institute, Amsterdam UMC, location VUmc, Amsterdam, The Netherlands, [2]Department of Molecular Cell Biology and Immunology, Amsterdam UMC, location VUmc, Amsterdam , The Netherlands, [3]Burn Center, Red Cross Hospital, Beverwijk, The Netherlands, [4]Association of Dutch Burn Centres (ADBC), Beverwijk, The Netherlands, [5]Informatics Institute, Institute of Advanced Studies, University of Amsterdam, Amsterdam, The Netherlands, [6]Laboratory for Experimental Oncology and Radiobiology, Center for Experimental and Molecular Medicine, Cancer Center Amsterdam and Amsterdam Gastroenterology Endocrinology and Metabolism; Oncode Institute, Amsterdam UMC, location AMC, Amsterdam, The Netherlands, [7]Department of Intensive Care, Red Cross Hospital, Beverwijk, The Netherlands, [8]ITMO University, Saint Petersburg, Russian Federation, [9]Paediatric Surgical Centre, Emma Children's Hospital, Amsterdam UMC, location AMC, Amsterdam, The Netherlands

Aim: The aim of this study is developing simulation models for the post-burn immune response based on existing (pre)clinical data from the literature.

Methods: The simulation domain was separated into blood and tissue compartments. Each of these compartments contained solutes and cell agents. Solutes comprise pro-inflammatory cytokines, anti-inflammatory cytokines and inflammation triggering factors e.g. damage-associated molecular patterns (DAMPs). The solutes diffuse around the domain based on their concentration profiles. The cells include mast cells, neutrophils, and macrophages, and were modeled as independent agents. The cells are motile and exhibit chemotaxis based on concentrations gradients of the solutes. In addition, the cells secrete various solutes that in turn alter the dynamics and responses of the burn wound system. Endothelial cells were modeled as fixed positions inside the burned area from where solutes and cell agents enter the wound area, and vice versa.

Results: We have developed an agent-based model to capture the complexity associated with the post-burn dynamics of inflammation [1, 2], including changes in cell counts and cytokine concentrations. The initial endothelial cell number, which refers to the number of blood vessels, exhibits the greatest influence on inflammation due to assumptions, with the lower numbers exhibiting more acute inflammation as a result of higher levels of the pro-inflammatory cytokine IL-6. In addition, the chemotactic affinity of the cells affect the inflammation response after burns too.

Conclusions: The current model successfully simulate significant factors influencing the post-burn immune response, i.e. the initial endothelial cell number, the chemotaxis threshold and chemotaxis intensity.

O2.2.2

3D bioprinting in reconstructive surgery – an approach for creating bioactive dressing as a base for skin substitute

Bogeva-Tsolova I[1], Dobrev M[2], Altankov G[3], Dimitrov D[4]
[1]Department of Surgical diseases, Clinic of Plastic and reconstructive surgery, Medical University Pleven, Bulgaria, , , [2]Department of Anatomy, histology and embryology, Medical University Pleven, Bulgaria, , , [3]Center of competence Medical University Pleven, Bulgaria, , , [4]Clinic of Oncology surgery, Georgi Stranski University Hospital, Pleven, Bulgaria, Medical University Pleven, Bulgaria, ,

Introduction
In recent years 3-dimensional bioprinting took quite a leap ahead creating tissues. The problem with the products occurs whit their translation into clinical practice and survival rate once transferred. The eventual success of bioprinted tissues, would be an exceptional contribution in the fields of regenerative medicine and reconstructive surgery.

Aim
At Medical University Pleven we are aiming to follow the best researchers in the tissue engineering field. Our preliminary results are presenting different approaches of creating the first layer of a 3-dimensional bioprinted skin substitute which acts as bioactive dressing.

Methods
The process includes bioprinting of collagen type I droplets with embedded cells. As a scaffold polypropylene or a silicone mesh is used on which the collagen, polycaprolactone and mesenchymal stem cells are printed. Before translation the patches underwent sterilization. For the experiment both male and female Wistar rats were used.

Results
The follow up showed great acceptance by the organism and no rejection signs. The average time for complete recovery of the created full thickness defect was 10 days. A month after grafting all the experimental animals showed no different appearance than before creating the defect. A skin biopsy was taken to document the newly formed skin.

Conclusion
The first line of 3D bioprinted patches showed great endurance by the animal organism and no signs of rejection, infection or any other disturbances. The results of our experiment will be used to proceed with the next layer of skin substitute, adding nanofibers to resemble the organization of extracellular matrix.

O2.2.3

The impact of age on the immune response and angiogenesis in full-thickness burns

Pignet A[1,2,3], Prevedel M[1,2,3], Fink J[1,2,3], Einsiedler J[1,2,3], Kotzbeck P[1,2,3]
[1]Division for Plastic, Aesthetic and Reconstructive Surgery, Medical University of Graz, Graz, Austria, [2]JOANNEUM RESEARCH Forschungsgesellschaft mbH, COREMED – Centre of Regenerative and Precision Medicine, Graz, Austria, [3]Research Unit for Tissue Regeneration, Repair and Reconstruction, Division for Plastic, Aesthetic and Reconstructive Surgery, Medical University of Graz, Graz, Austria
Background. Although the survival rate after extensive burns is diminished in the elderly, the age factor has often been neglected in previous in vivo studies.

Aim. Here, we characterized the systemic and local reactions following burn injuries in 11, 27 and 56 weeks old Wistar rats (n=36).

Methods. The animals either received four full-thickness contact burns or served as unwounded controls. Non-invasive imaging methods were applied and blood was collected from the tail vein to detect differences in plasma cytokine concentrations. Body weight and food intake were measured daily. 7 days post burn (7dpb), tissue biopsies were collected and analysed on a histologic and molecular level (qPCR).

Results. Tissue perfusion was significantly impaired in 27 and 56 weeks old rats compared to 11 weeks old rats. 7dpb immune cell infiltration into wounds was increased in the 27 and 56 weeks old rats. KC-GRO was also increased in the serum of the 27 weeks old animals already before the burn, as well as 1 and 7 dpb. In contrast, Ccl-2 gene expression was elevated in the punch biopsies of the 11 weeks old rats, both in the burnt and the control animals. Nevertheless, there were no significant differences in wound sizes, nor in weight loss after burns.

Conclusion. Although there are age-related differences in the angiogenic potential and the immune response, they do not seem to affect the healing of small burn wounds significantly.

O2.2.5

Pronostic factors in burned pregnant women

Fredj H[1], Gasri B[1], Mokline A[1], zarrouk S[1], Jemi I[1], Saad M[1], Messadi A[1]
[1]Burns inensive care department, Traumatology And Burn Center, Ben Arous, Tunisia

Aim : The aim of our study was to identify the predictive factors of maternal and fetal mortality in patients burned during pregnancy

Methods : A descriptive retrospective study conducted over a period of 15 years (2007-2022), including all burned pregnant women admitted in the Burn Intensive care department at the trauma and burn center in Tunisia. Demographic (circumstances of burns), clinical (age, burned surface area) and evolutionary data were collected. Uni and multivariate analysis was performed by SPSS22.

Results: Twenty six pregnant females were included. The mean age was 28 ± 5 years. The mean total body surface area (TBSA) was 32%. The term of the pregnancy was greater than 24 weeks in 11 cases.The maternal mortality rate was 31% (n=8) secondary to septic shock in all cases. The fœtal mortality rate was also 31%. Shock on admission (p: 0.02), use of mechanical ventilation (p: 0.04), initial hyperglycemia (p: 0.02), occurrence of sepsis (p: 0.03), burns secondary to suicide attempt (p: 0.02) and deep burns (p: 0.03) were factors of poor fetal and maternal prognosis. TBSA greater than 35% was identified as a predictor of maternal mortality (p: 0.001; AUC: 0.993; 95% CI: 0.97-1) and foetal mortality (p : 0,04 ;ASC : 0,792 ; IC95% : 0,59-0,98).

Conclusions : Burns in pregnant women are associated with a high maternal and fetal mortality. The prognosis depends essentially on the extent of the burns.

O2.2.6

Blood lactate level in predicting mortality of patients with severe burns

Zagorac D[1], Mesić A[1], Škunca A[1], Magdić Turković T[1]
[1]Sestre milosrdnice University Hospital Center, Zagreb, Croatia

Aim: Analysis of blood lactate in patients with severe burns.

Methods: The retrospective study included patients admitted to the Burn intensive care unit (BICU) between January 2016 and December 2022 with a total body surface area (TBSA) burned ≥ 20%. Out of 193 patients admitted to the BICU, 87 patients were included in the study. Blood lactate levels were analyzed within 7 days after the injury. We analyzed the prediction value of adding blood lactate level and number of comorbidities to rBaux score.

Results: Regression coefficients for lactate on 7th day after the injury, presence of two or more comorbidities comparing to non and rBaux score were found to be statistically significant. Odds ratio for lactate on 7th day was estimated at 6.016 (95% CI of 1.430-25.311), presence of two or more comorbidities comparing to non 4.378 (95% CI of 1.083-17.690) and rBaux score 1.047 (95% CI of 1.083-17.690). Based on results conclusion was made that with an increase of lactate by 1 odds of a lethal outcome are 6 times higher, patients having two or more comorbidities have 4 times higher chances of lethal outcome comparing to those with non and with increase of 10 rBaux points the odds of a lethal outcome are expected to increase by 58,8 %. Area under the ROC curve was 0.85

Conclusions: Addition of lactate levels and presence of comorbidities to rBaux score improves mortality prediction in severe burns.

O2.2.7

A multi-scale scar model in burn care: from micro- to macroscale.

Korkmaz H[1,2,3,4], Egberts G[5,6], Pijpe A[1,3], Vermolen F[6], van Zuijlen P[1,3,7]
[1]Department of Plastic Reconstructive and Hand Surgery, Amsterdam Movement Sciences (AMS) Institute, Amsterdam UMC, location VUmc, Amsterdam, The Netherlands, [2]Department of Molecular Cell Biology and Immunology, Amsterdam UMC, location VUmc, Amsterdam, The Netherlands, [3]Burn Center, Red Cross Hospital, Beverwijk, The Netherlands, [4]Association of Dutch Burn Centres (ADBC), Beverwijk, The Netherlands, [5]Delft Institute of Applied Mathematics, Delft University of Technology, Delft, The Netherlands, [6]Research Group Computational Mathematics (CMAT), Department of Mathematics and Statistics, University of Hasselt, Hasselt, Belgium, [7]Paediatric Surgical Centre, Emma Children's Hospital, Amsterdam UMC, location AMC, Amsterdam, The Netherlands

Aim: This study aims to develop a multi-scale scar model in burn care incorporating data from micro- to macroscale from preclinical and clinical research, regular care, quality and outcome registrations.

Methods: By forming an interdisciplinary network between various disciplines, e.g., intensive care, surgery, therapists, researchers (both clinical and fundamental), and participation of patient representatives, processes that play a role during scar formation after burn will be studied using computational modeling. Data will be collected from scars (formation) from preclinical (in vitro) models and correlated to clinical data, i.e., data from the Patient and Scar Assessment Scale (POSAS), and integrated into the multi-scale scar model. In this way, the dynamic processes and tissue organization occurring during scar formation can be investigated.

Anticipated results: We expect to develop dynamic multi-scale scar models for burn wounds, which will be continuously fed by new (generated) data from micro- to macroscale, being it a continuous learning model for scar formation after burn. Eventually, this will deepen our knowledge about processes that play a role during scar formation after burn, as well as serve as a predictive tool for post-burn dermal evolution, with the major goal of optimizing clinical practice.

Conclusions: Because of the complex nature of scars, which implies the urgency of collaboration between many disciplines, and also patients, a multi-scale scar model is indispensable. Here we introduce a basic conceptual model for a multi-scale scar model in burn care.

O2.2.8

The effects of fish skin on the wound healing progression in a standardized pig model

Pignet A[1,2,3], Hofmann E[1,2,3], Hahn D[1,2,3], Kamolz L, Kotzbeck P[1,2,3]
[1]Medizinische Universität Graz, Graz, Austria, [2]Division of Plastic Aesthetic and Reconstructive Surgery, Research Unit for Tissue Regeneration, Repair and Reconstruction, Graz, Austria, [3]JOANNEUM RESEARCH Forschungsgesellschaft mbH, COREMED – Centre of Regenerative and Precision Medicine, Graz, Austria, [4]Research Unit for Tissue Regeneration, Repair and Reconstruction, Division for Plastic, Aesthetic and Reconstructive Surgery, Medical University of Graz, Graz, Austria
Introduction. Fish skin grafts have proven to be effective in acute and chronic wound healing, as well as burns. However, the underlying mechanisms promoting healing are still unknown.

Aim. The aim was to investigate the effects of fish skin grafts on wound healing properties under standardized conditions in a full-thickness skin defect pig model.

Materials and Methods. Fish skin grafts were tested in a full-thickness skin defect (3 cm x 3 cm) pig model (n=6; male landrace pigs) and compared intra-individually to control wounds (foam dressing). The experiment lasted for 21 days. Reapplication of the dressings was carried out after 9 days post wounding. Wound scoring, photo-documentation and non-invasive imaging methods were carried out 5, 9, 14 and 21 days post wounding. Tissue biopsies were sampled at the same time points and subjected to histologic analysis (HE and Masson's trichrome stains).

Results. As soon as on day 5, wounds treated with fish skin grafts showed more granulation tissue compared to control wounds. Planiometry revealed lower residual wound areas of the wounds treated with fish skin, especially on day 9 and 14 post wounding. On day 21, control wounds showed severe signs of wound contraction compared to the treated wounds. Thermography revealed significant higher surface temperature in fish skin-treated wounds on day 9 and day 14.

Conclusion. Fish skin grafts seem to support wound healing due to the accelerated formation of granulation tissue and the prevention of wound contraction in a pre-clinical full thickness wound model.

O2.3.1

An artificial intelligence language model can improve the readability of burns first aid information

Baldwin A[1]
[1]Department of Burns and Plastic Surgery, Buckinghamshire Healthcare NHS Trust, Aylesbury, United Kingdom

Aims
Assess whether an artificial intelligence (AI) language model can improve the readability of burns first aid information.

Methods
The top 50 English-language webpages containing burns first aid information were compiled. An AI language model (ChatGPT) was prompted to rewrite these to be understandable by an 11-year-old, the target advised by the American Medical Association (AMA) and Health Education England (HEE) for patient education materials (PEMs). Readability was assessed using five tools: Flesch Reading Ease Score (FRES), Flesch-Kincaid Grade Level (FKGL), Gunning Fog Index (GFI), Coleman-Liau Index (CLI), Simple Measure of Gobbledygook Index (SMOG).

Results
Mean readability scores of the unmodified PEMs were: FRES 73.6, where the target was ≥80; FKGL 6.0; GFI 8.2; CLI 8.3; SMOG 6.1, where the target grade was ≤6.9. Post-modification mean scores were: FRES 82.2; FKGL 4.9; GFI 7.4; CLI 6.9; SMOG 6.1. Once rewritten using AI, paired t-test demonstrated that all readability scores improved significantly ($p<0.001$). Two (4%) of the unmodified PEMs were judged to be at the target reading level using all tools. The average 'median grade score' was 6.9 (SD=1.1). One-sample one-tailed t-test demonstrated that this was not significantly below the target level ($p=0.31$). Following AI modification, nine (18%) PEMs were at the target level using all tools. The average 'median grade score' improved to 6 (SD=0.9, $p<0.001$).

Conclusions
Much of the burns first aid information available online is written above the recommended reading level. An AI language model can improve readability to better meet the level advised by AMA and HEE.

O2.3.2

Epidemiology of burn injuries in pediatric patients with and without migrant backgrounds in Chile

Danziger K[2], Bartholomew P[2], Fuentes R[1], Flores O[1]
[1]COANIQUEM, Santiago, Chile, [2]School of Medicine, University of Southern California, Los Angeles, CA, United States

Aim: To describe the epidemiological differences among migrant and non-migrant children admitted to COANIQUEM burn centers in Chile.

Methods: This was a retrospective, observational study of pediatric burn patients admitted to COANIQUEM facilities in Chile between January 2019 and December 2022. Patients were categorized as migrants if they, or at least one of their parents, reported non-Chilean nationality. Categorical and continuous variables were presented as counts and frequencies. Categorical variables were compared between patient groups using Chi Square, Fisher's exact, and proportion tests.

Results: A total number of 9,345 patients were enrolled during the study period. Six hundred and ninety nine patients were migrants. Migrant patients were younger, received sub-optimal first aid practices more frequently, took longer to seek medical care, and suffered larger burns overall. Twenty percent of migrant patients were missing insurance information. Significant differences in burn mechanism between migrant and non-migrant patient groups were found.

Conclusions: This study showed the need for injury prevention programs that are sensitive to the cultural and sociodemographic differences of the migrant population. Further investigation is required to assess the accessibility and opportunity of burn care for migrant population in the Chilean healthcare system.

O2.3.3

Transforming epidemiological data into burns prevention campaigns: the COANIQUEM experience

Rojas-Zegers J[1], Domic C[1], Fuentes R[1], Flores O[1]
[1]Coaniquem, Santiago de Chile, Chile

Aim: To describe the process followed at COANIQUEM, a specialized burn center in Chile, to produce prevention campaigns using epidemiological data.

Methods: A phenomenological, qualitative approach was followed. Semi-structured interviews were conducted with decision-makers on 6 levels (clinicians, epidemiologist, outreach specialist, outreach director, designers and communication team) using a purposive sample. The interviews were recorded, transcribed and analyzed using thematic analysis. Themes were constructed to understand the sources of information and decision-making process used to build the prevention campaigns and evaluate the results obtained.

Results: The process of producing a prevention campaign in COANIQUEM is described emphasizing the decision-making process performed at each level. Sources of information used in each stage of the process are standard and contribute to collaborative decision-making. The process was based on the expertise of the involved professionals and concluded with the evaluation of the campaign. The campaigns were considered successful.

Conclusion: COANIQUEM´s approach to producing prevention campaigns has shown to be effective. The transdisciplinary collaborative team works in a productive chain obtaining a high-impact campaign as a result. Continuous feedback across all levels of the process is warranted to continue improving the quality of the prevention campaigns. This model might be helpful for other burn prevention teams.

O2.3.4

Epidemiological characteristics of burn injuries in Chilean adolescent patients

Bartholomew P[2], Danziger K[2], Fuentes R[1], Flores O[1]
[1]Research Department, COANIQUEM, Santiago, Chile, [2]School of Medicine, University of Southern California, Los Angeles, CA, United States

Aim: To investigate the epidemiological characteristics of Chilean adolescent patients and to compare them to patients aged 0-4 years old.

Methods: A retrospective observational study of all acute burn injuries admitted to COANIQUEM facilities from January 2019, to December 2022. Pediatric patients with acute burn injuries aged 0-4 or 10-19 years old were included in the analysis. Demographic and injury characteristics were analyzed using descriptive statistics, and comparisons between the two age groups were made using Wilcoxon Rank Sum test and Chi-Squared test or Fisher's Exact test. A proportion test was used to identify differences within variable categories by age group.

Results: A total of 7482 patients were included in the analysis. Majority of adolescent patients were females (56%, n=1054) who sustained burn injuries to their lower body (37%, n=696) and were mostly injured by a hot liquid (67%, n=1262). Statistically significant differences in epidemiological characteristics between children 0-4 years old and adolescents were found by sex ($p<0.001$), the patient's living situation ($p<0.001$), mother's education ($p<0.001$), injury season ($p<0.001$), total body surface area ($p=0.005$), injury agent ($p<0.001$) and mechanism ($p<0.001$), first aid treatment ($p<0.001$), and injury location ($p<0.001$).

Conclusions: Our data showed that there are significant differences in the demographic and clinical characteristics of adolescents suffering burn injuries compared to their younger peers. These findings can guide future research and prevention campaigns.

O2.3.5

Implementing outcomes of aetiological research in an online programme to prevent burn accidents in children under 5 years of age

Van Zoonen E[1], Meij-de Vries A[2,3,4], van Baar M[3,5], van Schie C[1], van der Vlies C[6,7]
[1]Dutch Burns Foundation, Beverwijk, Netherlands, [2]Burn Centre, Red Cross Hospital, Beverwijk, Netherlands, [3]Association of Dutch Burn Centres (ADBC), Beverwijk, Netherlands, [4]Pediatric Surgical Center, Emma Children's Hospital, Amsterdam, Netherlands, [5]Department of Public Health, Erasmus MC, Rotterdam, Netherlands, [6]Burn Centre, Maasstad Hospital, Rotterdam, Netherlands, [7]Erasmus MC, Trauma Research Unit, Department of Surgery, Rotterdam, Netherlands

Aim
The aim was to implement the outcomes of an aetiological prospective cohort study in an online programme to prevent burn accidents in children under 5 years of age.

Methods
Data on the percentage- and aetiology of burn accidents per age group were obtained from an aetiological cohort study. The data were linked to relevant development stages in children under 5 years of age from the Dutch Development Instrument (van Wiechenonderzoek). Subsequently, a milestone alert matrix was developed in which age (in months) was linked to the percentage of burn accidents, development stages and associated safety hazards in that age group.

Results
For each relevant development stage in the milestone alert matrix, a specific digital newsletter was created in collaboration with communication experts. Information on the characteristics of a specific development stage together with information on how to prevent burn accidents in that particular stage were provided in an positively phrased and easy-to-read newsletter format. With targeted advertisements, parents were encouraged to enrol in the newsletter flow. Up till now, approximately 14,500 parents have subscribed. Effectiveness of the campaign was measured by an online questionnaire and showed an increase in knowledge and self-reported safety behaviour.

Conclusions
This study shows that epidemiological data can successfully be implemented in an online prevention program with an increase in knowledge and safety behaviour in parents of children under 5 years of age.

O2.3.6

Assessing the effect of the Cost-of-Living Crisis on hot water bottle related burns in the United Kingdom, a single-centre retrospective observational study

Sangha M[1], Baker M[1], Baldwin A[1], Murray A[1]
[1]Stoke Mandeville Hospital, Department of Plastic & Reconstructive Surgery, Aylesbury, United Kingdom

Aim: to assess whether the Cost-of-Living Crisis (CoLC), an ongoing economic period in the United Kingdom (UK) where the cost of essential commodities exceeds household income, is associated with an increase in hotwater bottle related (HWBR) burns.

Methods: records of patients admitted with HWBR burns between December 2019 and March 2023 were reviewed and the following data collected: patient demographics, burn depth and surface area, patient comorbidities and patient index of multiple deprivation (IMD). Incidence of admissions, IMD, and severity of injury were compared prior to and during the CoLC using either independent T-test or Kruskal-Wallis H test. The start of the CoLC was defined as October 2021, the first month where the UK Office of National Statistics identified rising energy costs.

Results: between December 2019 and March 2023, 177 patients were admitted with HWBR burns, 79 prior to the CoLC and 98 during. 55 patients were male and 122 female. An independent T-test comparing average monthly admissions prior and during the CoLC identified a significant difference ($p=0.042$), with a mean increase of 1.85 cases (95%CI: 0.71-3.63). Additionally, a Kruskal-Wallis H test showed statistically significant difference in the number of patients admitted with HWBR burns between the seasons ($p=0.001$). An independent T-test comparing average patient IMD prior and during the CoLC identified no difference ($p=0.583$).

Conclusion: the increase in HWBR burns coincides with the rise in energy costs and general cost of living that has occurred in the UK since October 2021.

O2.3.7

Electrical burns in train climbers treated in the Helsinki Burn Centre during the last thirty years

Kinnunen E[1], Korkiamäki A[1], Lindford A[1], Vuola J[1]
[1]Helsinki Burn Centre, Department of Plastic and Reconstructive Surgery, Helsinki University Hospital and University of Helsinki, Helsinki, Finland

Aim: To review the electrical burns and their outcomes in train climbers treated in the Helsinki Burn Centre during the last thirty years.

Methods: This is a retrospective study of electrical burn patients admitted to the Helsinki Burn Centre between November 1993 and December 2022. Of 138 patients with electrical burns, 16 (11.6%) had climbed onto the roof of a train and were included in the study. Patients' charts were reviewed, and several trauma- and outcome-related variables were collected.

Results: 14 (87.5%) of the 16 patients were male. The mean age of the patients was 16.9 years (range: 13-29 years). All the burns were high-voltage electrical burns. One of the burns was occupational. 10 (62.5%) patients had an additional suspected flame burn. None of the incidents were a suicide attempt. The mean burn size was 46% of the total body surface area. Three (18.8%) patients died during the in-hospital stay. The mean length of in-hospital stay was 51 days. On average, the patients required 6 operations (range: 0-32) during the index hospitalization. Nine (56.3%) patients needed escharotomies, 7 (43.8%) fasciotomies, 12 (75.0%) skin grafting, 2 (12.5%) a local or pedicled flap, 1 (6.3%) a microvascular flap, 1 (6.3%) a minor amputation and 3 (18.8%) a major amputation. Two (12.5%) patients required temporary renal replacement therapy.

Conclusions: Train climbers represent a rare group of young patients with electrical burns. Precautionary strategies should be implemented to prevent these injuries that are associated with a significantly high morbidity and mortality.

O2.3.8

Use of different social media platforms to deliver burns. Prevention information

Lee N[1]
[1]Chelsea And Westminster, London, United Kingdom

Aim - To review efficacy of different social media platforms to deliver burn prevention messages in the UK

Method - Release of different burn prevention messages on different social media platforms and review views and interactions to see if there was one platform better for release of prevention campaigns.

Facebook, twitter, LinkedIn and TikTok were used

Results - interactions and views were related to followers, likes, topics and hash tags.

Seasonal related topics drove up view and interactions with one viral prevention campaign release.

Media interest was seen with topical topics which lead to inclusion in government policy changes in one hot topic.

Conclusion - overall increase views and interactions were seen with seasonal and hot topics leading to viral content release. Use of different social media platforms accessed different people so even if low interactions over time increased followership leading to generation of wider reach. Use of all platforms to release of prevention campaigns lead to reaching wider range of people so in part need for release on all platforms to gain the widest reach of prevention campaigns.

O2.7.1

How have the German AWMF guideline and the quality certification influenced the distribution of pediatric burn patients across Germany?

Schriek K, Wahler S, Sinnig M
[1]Pediatric Hospital Auf Der Bult, Hannover, Germany

This retrospective study aims to determine the influence of the guideline and quality certification on the care structure for children with burns over the 2013-2021 period.

Methods: We evaluated the quality reports of all German hospitals provided by the joint federal committee for burn wounds as the main research, further subdividing these based on burn depth and body region.

Results:
The relative distribution of burn depth in 2021 for specialized clinics and centers versus peripheral clinics (total number) was for grade 2a: 46.9%/45.6% (1,929/3,971), grade 2b: 35.2%/28.4% (1,447/3,915) grade 3: 15.8%/17.7% (650/1,541), and not specified: 1.5%/4.9% (63/411).
In 2013-2014, the specialized clinics and centers treated 24.3% of all pediatric burns, in 2016-2018 this was 28.2%, and in 2020-2021 it was 31.6%.
Concerning the special indicator "hand burns", there was also an increase in the total number of patients treated in children's departments, from 2,157 patients (2013) to 2,488 patients (2021), with a maximum number of 2,931 cases in 2017. The proportion of second/third-degree burns of the hand treated at centers was 23.7%/31.2% in 2013-2014, 27.1%/28.9% in 2016-2018, and 34.1%/33.3% in 2020-2021.

Summary: Comparing the periods before and after the implementation of the guideline and quality certification revealed a 7.3% increase in the treatment of all thermal injuries in childhood in specialized clinics and centers compared to treatments in peripheral hospitals, although no significant shift (+2%) could be detected for third-degree burns.

O2.7.10

PAY ATTENTION TO THE SOCIAL ASPECTS OF CHILD BURNS

Dayi S[1], BEZİRCİ ÖDEK Ö, DEDE B, İŞÇİMEN S
[1]University Of Health Sciences, Bursa, Turkey

Aim:The medical and social teams work together in child burns to maximize the child's best interests.This study aims to reveal the results we obtained in burns of children,which we consulted with the social workers,how preventive studies can be carried out,to determine the areas that can be helped socially in child burns,and to reveal the social aspects of child burns.
Material and

Methods:We retrospectively analyzed the files of child burns who were hospitalized in the last one-year period in our burn center.

Results:Social services were consulted in 72 (26 girls; 46 boys) of 208 children (2 months-14 years) to reveal the family's social status better,suspicious findings with a history of burns,and possible causes of child abuse and neglect. Tea and hot water burns were prominent.The percentage of burns was between 0.5%-56.5%.Of the 136 children not consulted with Social Services, 13 had an operation requiring a graft.Of the72 children consulted with social services,26 required grafts.Two children consulted with Social Services and were given counseling support,educational support for three children,five health support,two social and economic support,and one identity card.One child was also taken from her family and taken into custody.However,the results of32 consultations with social workers could not be followed.

Conclusions:The importance of social services is better understood day by day.Positive steps include planning preventive work in child burns and implementing protective decisions for events that may cost the child's life beyond burn treatment.It should be remembered that inter-institutional communication should be faster and more professional,which will mean more help to these children.

O2.7.11

DERMAL MATRIX AND THE MEEK MICROGRAFT TECHNIQUE AS RECONSTRUCTIVE TREATMENT OF GIANT SPINA BIFIDA IN NEONATE. CASE REPORT

Cordova-Orrillo J[1], Lopez–Sanchez E, Castaneda–Peralta L, Lobaton–Rosas r
[1]Clinica Delgado Auna, LIMA, Peru

Aim
Dermal substitutes and the Meek micrograft technique are used in the reconstructive treatment of complex and extensive soft tissue defects. The objectives of this article are to describe the technique and benefits of using the dermal matrix together with the Meek micrograft technique in the reconstruction of a case of giant spina bifida in a neonatal patient.

Method
The patient is a newborn of 6 days born and 3198 gr of weight, who has due to a giant spina bifida a defect of 8cm x 7cm; initially treated with bilayer acellular dermal matrix, associated with a negative pressure system for a period of 4 weeks, then the Meek technique was used for autografting in 2 to 1 scales expansion. The clinical evolution is described, taking into account the presence of alarm and contingency factors.

Results
The neodermis provided good functional and aesthetic coverage results in the neonate. The use of the tissue expansion system with the Meek technique decreased the morbidity and mortality of the donor area.

Conclusion:
Dermal matrix and Meek micrograft system as reconstructive tools for complicated defects in the pediatric population are an important alternative and safe to be consider.

O2.7.2

Burns of immigrants and refugees/asylum seeker children; experience of a single pediatric burn center

Demir S[1], Akkaya F[1], Bostanci S[1], Akbas I[1], Senel E[2]
[1]University Of Health Sciences, Ankara Bilkent City Hospital, Children Hospital, Ankara, Turkey, [2]Ankara Yildirim Beyazit University, School of Medicine, Department of Pediatric Surgery, Ankara, Türkiye

Aim: We aimed to share our data about burns of immigrants and refugees/asylum seeker children who had to leave their homes due to the civil war, treated in our pediatric-burn-center (PBC).

Methods: Children who immigrated or lived in refugee camps in their own countries and were under the status of asylum seeker/refugee in Türkiye and were treated in our PBC included in the study. Demographic and clinical data were evaluated retrospectively and compared with Turkish patients. $P<0.05$ was considered significant.

Results: Between 01 January 2011 and 31 March 2023, 2036 burned-children treated. Of these, 317 (15.6%) were immigrants or refugees/asylum seekers. Their length-of-stay at PBC was longer than Turkish (24.9 vs. 15.9 days, $P<0.001$), total-burned-body-surface-area was bigger (19.4 vs 14.1%, $P<0.001$), the incidence of fire/flame burns was higher (32.7% vs. %17.5, $P<0.001$), and grafting rates were higher (45.0% vs. 32.1%, $P<0.001$). Their mortality rate was four-times higher (7.5% versus 2.0%, $P<0.001$). Of these, 79.8% were Syrian, 10.1% Iraqi, 8.5% Afghan, and 1.6% Somalian. Syrian victims were injured mostly in the winter-months and by the flame/fire burns caused by the fuel-stove used for heating in refugee camps. The second most common cause was the fires caused by other reasons in the tents/barracks, followed by bomb explosions.

Conclusions: Immigrants and asylum-seekers/refugees escaping from the war live in terrible conditions in the camps. Fuel-stoves and related fires are the most common cause of burns in refugee camps. Therefore, international organizations should find a solution to the heating in camps other than fuel-stoves.

O2.7.3

Burn-specific health-related quality of life of children 5-7 years after burns: a national multicenter study

Heijblom M[1], Dijkshoorn J[1], van Baar M[2,3], van der Vlies C[2,4], Spronk I[2,3]
[1]Burn Centre, Maasstad Hospital, Rotterdam, The Netherlands, [2]Association of Dutch Burn Centres, Maasstad Hospital, Rotterdam, The Netherlands, [3]Erasmus MC, University Medical Centre Rotterdam, Department of Public Health, Rotterdam, The Netherlands, [4]Trauma Research Unit Department of Surgery, Erasmus MC, University Medical Centre Rotterdam, Rotterdam, The Netherlands

Aim: To study long-term burn-specific health-related quality of life (HRQL) of children 5-7 years post-burn and assess factors associated with long-term HRQL.

Methods: Parents of children (5-<18 years) who were hospitalized or had surgery for their burns between August 2011 and September 2012 completed the Burn Outcomes Questionnaire. HRQL and factors associated with HRQL were studied for the total sample, and outcomes were compared between children with mild/intermediate burns and children with severe burns (>10% Total Body Surface Area (%TBSA) burned).

Results: hundred and two children were included (M: 7.4%, SD: 6.4). Many parents rated their child's health as excellent (46.1%) or very good (35.3%) 5-7 years post-burn. Hardly any child had problems with pain (2.3%) physical function and sports (1.6%) and upper extremity function (0.9%). Parents of children with severe burns indicated significantly more problems with 'appearance' (89.2% versus 71.5%; p=0.014) and 'parental concern' (94.1% versus 84.8%; p=0.021). Full thickness burns were related to a lower HRQL in four BOQ domains , whereas the number of surgeries was related to two BOQ domains.

Conclusion: The majority of the children in our sample had a good HRQL 5-7 years post burn. Children with full thickness burns and those who underwent surgery have a higher risk of a lower long-term HRQL. These results give children with burns, their parents and healthcare professionals insights in long-term burn-specific HRQL.

O2.7.4

Meek micrografting technique as salvage surgical technique for extensive burns without skin substitutes

Enescu D[1,2], Nacea I[1,2], Stoica C[2], Tomiță M[2], Tatar R[1,2]
[1]Carol Davila University of Medicine and Pharmacy, Bucharest, Romania, [2]Grigore Alexandrescu Clinical Emergency Hospital for Children, Bucharest, Romania

Aims
The coverage of burns overpassing 50% TBSA raises many challenges for burn teams and using the Meek micrografting technique represents a reliable choice for these highly difficult cases.

Methods
The Plastic Reconstructive Surgery and Burns Department of the "Grigore Alexandrescu" Hospital for Children, Bucharest, is the national referral center for all major pediatric burns in Romania. The Meek technique was available in our department since July 2019, so we performed a retrospective review of burn patients admitted from July 2019 till June 2022. The inclusion criteria were the presence of burn wounds and surgical protocol including this specific procedure.

Results
Considering the inclusion criteria, 29 patients were identified (boys 72,41%). The patient age varied between 1year 9 months and 17 years 10 months. The median TBSA was 57.5±19.96% (range 20-90%). The main etiology for this patient group was flame (19 cases), followed by electrical burns and scalds. The patients in the scald group were significantly younger (range 1year 9 months – 3 years 1 month) than the rest of cases. All of them had early and seriate burn wound excision and covering with Meek micrografts at expansion rates from 1:3 to 1:9 in the most severe patients.

Conclusion
Despite not having access to a skin bank or to synthetic skin substitutes, we manage to treat successfully burn patients with limited donor sites for autografts. The Meek technique proved to be a reliable tool for salvaging massive pediatric burns, allowing early excision of extensive burn wound areas and prompt covering.

O2.7.5

Long- term follow-up results of the pediatric NexoBrid enzymatic debridement RCT

Monstrey S[2], Hoeksema H[2], Shoham Y[1]
[1]Soroka University Medical Center, Beer Sheba, Israel, [2]University Hospital Gent, Gent, Belgium

Aim: The aim of this study was to assess the long-term effects of NexoBrid® (NXB) vs. standard of care (SOC) in children.

Methods: 145 children suffering from deep thermal burns were enrolled in a multicenter, multinational, open label, randomized, controlled phase III study. 72 children were randomized to NXB and 73 to SOC debridement methods. Wound care after achieving complete debridement was according to routine methods, at the investigators' discretion. Patients continued follow up for at least 30 months post wound closure.

Results: The acute stage results reported previously included 12 months MVSS scores of 3.83 for NXB and 4.86 for SOC. The 24 months results corroborate the 12 months results. Scar assessments were performed on 107/145 patients. The mean MVSS score was 3.21 for NexoBrid and 3.8 for SOC, establishing non-inferiority (P<0.0001). Mean POSAS scores were also lower in the NexoBrid group, 22.9 vs. 27.7 in SOC, but not statistically significant (p=0.08). When excluding remote assessments (performed due to COVID-19), NXB patients had a lower mean POSAS total score of 25.3 vs. 33.4 in SOC (p=0.035), and a lower observer score, 11.7 vs. 15.5 (p=0.046). Functionality and quality of life evaluations were comparable between the groups.

Conclusions: NXB was shown to be safe without deleterious effects on wound healing, scarring, functionality and quality of life in pediatric burns.
*Funded by MediWound Ltd. and by US Federal funds from the Office of the Assistant Secretary for Preparedness and Response, BARDA, under Contract No. HHSO100201500035C

O2.7.6

Amputation in burned children; experience at a tertiary pediatric burn center

Demir S[1], Erten E[1], Muftuogullari S[1], Aydin Y[1], Senel E[2]
[1]University Of Health Sciences, Ankara Bilkent City Hospital, Children Hospital, Department of Pediatric Surgery, Pediatric Burn Center, Ankara, Turkey, [2]Ankara Yildirim Beyazit University, School of Medicine, Department of Pediatric Surgery, Ankara, Türkiye

Aim: We aimed to share our clinical data and experience with amputation among inpatient burned children in our Pediatric Burn Center (PBC).

Methods: The records of the patients between January 2005 and March 2023 were reviewed retrospectively. Age, gender, length-of-stay, total burned surface area, cause of the burn, grafting, amputation, and mortality rate were evaluated. Patients who underwent amputation were identified, and their data were compared with patients whose amputation was not performed. $P<0.05$ was considered significant.

Results: 167 amputations were performed in 53 of 2537 patients. The fingers and toes were amputated most frequently, followed by the forearms. The mean age of amputated victims was found to be higher than non-amputated (7.50 years vs. 4.45 years; $p<0.001$), the length-of-stay at PBC was longer (15.17 versus 65.60 days; $p<0.001$), the total burned surface area was larger (29.40% vs. 14.93%, $p<0.001$), the grafting rate was higher (94.3% vs. 28.7%; $P<0.001$), and the male ratio was higher (81.1% vs. 60.3; $p=0.004$). Of the amputated victims, 29 (54.7%) had flame burns, and 22 (43.4) had electrical burns. The mortality rate was 3.8% in the amputation and 2.4% in the non-amputation group ($p<0.001$).

Conclusions: Although flame and electrical burns are less common in children compared to scald burns, amputation is performed at much higher rates. In order to prevent these, it is crucial to make the first evaluation immediately and to perform the necessary fasciotomies and escharotomies before the compartment syndrome develops. In addition, children and parents should be educated about prevention.

O2.7.7

Development of a value-based healthcare core outcome set for children after burn injuries

Verwilligen R[1], van der Vlegel M[2], van Dammen L[2], van Zuijlen P[1,5,6,7], The National Burn Care, Education and Research Group The Netherlands[1,3,4]
[1]Burn Centre Red Cross Hospital, Beverwijk, The Netherlands, [2]Dutch Burns Foundation, Beverwijk, The Netherlands, [3]Burn Centre Maasstad Hospital, Rotterdam, The Netherlands, [4]Burn Centre Martini Hospital, Groningen, The Netherlands, [5]Amsterdam UMC location Vrije Universiteit Amsterdam, Department of Plastic Reconstructive and Hand Surgery, Amsterdam, The Netherlands, [6]Amsterdam Movement Sciences (AMS) Institute, Amsterdam UMC, Amsterdam, The Netherlands, [7]Amsterdam UMC location University of Amsterdam, Paediatric Surgical Centre, Emma Children's Hospital, Amsterdam, The Netherlands

Aim: The three Dutch Burn Centres aim at optimizing person-centered burn care and improving patient-relevant outcomes by adapting value-based healthcare (VBHC). Transparent measurement and reporting of patients relevant outcomes is essential in VBHC, and requires a core set of most important and relevant outcomes. The aim of our study was to develop a VBHC-burns core set for pediatric patients.

Methods: We conducted a two-round modified Delphi study to reach consensus among (parents of) pediatric patients (<18 years old), healthcare professionals and researchers. In each round, items were selected if 70% of each group considered an item 'important'. In the 1st round a 9-point likert scale and in the 2nd round a yes/no scale was used to rate if items are important.

Results: A total of 62 items were included in the Delphi study. 141 participants completed the first round. In this round, 10 items were included in the VBHC-burns core set: physical functioning, scar contraction, quality of life, pain, itchiness, sleep quality, mobility of functional areas, mental health, depression and the possibility of executing hobbies. The second and last Delphi survey was completed by 68 participants and resulted in the addition of 3 more items: anxiety, self-confidence, return to school.

Conclusions: Using the Delphi method, we will establish a VBHC core outcome set, consisting of outcomes and indicators that are important for pediatric burn patients. In the near future, these outcomes, quality indicators and process indicators will be systemically monitored and analyzed in our care to improve patient relevant outcomes.

O2.7.8

Lengyel Peter , Frišman Eugen, Eliáš Erik, Hyseniová Sylvia : Electrical burns in our pediatric patients in 2004-2022

Lengyel P[1], Frišman E, Eliáš E, Hyseniová S
[1]Hospital AGEL Košice-Šaca, Košice - Šaca, Lucna 52, Slovakia
Lengyel Peter , Frišman Eugen, Eliáš Erik, Hyseniová Sylvia :

Electrical burns in our pediatric patients in 2004-2022.

The aim: is restrospective study about electrical burns of children treated in last 19 years in Burns and Reconstructive Surgery Clinic in Košice-Šaca.

Methods: the group of study were patients suffering electrical burns in the age 0 – 18 years of age hospitalized since 1.1.2004 to 31.12.2022 in our workplace. If the treatment
started in our clinic, in the case of burned children fluid administration was performed according Galveston Shriners Burns Hospital formula. The age, mechanism of injury,
tension of current / up to 1000 Volts low tension, more than 1000 Volts high tension/, the count and type of surgical treatment / amputation or reconstructive
surgery /, were included to study data collection.
Results: 27 pediatric patients had low tension injury, 11 high tension injury. The mechanism of injury was in 34 cases straight contact to source of electrical current , in 4 cases electrical arc (flash) injury and no case of lightning injury to child occured. We perform after necrectomy 29 skin grafting operations, 8 flap plasties operations and 6 amputations. No case of death occured in our group of electrically burned
children.
Conclusion: Electrical injuries are rare between thermal injuries, but can lead to life threathening severity. The majority of high tension injuries are in adolescent age.
The treatment to electrical injury is based on multidisciplinary cooperation to save the patient, allow him to recover and maintain the functions.

O2.7.9

ELECTRICAL BURN INJURIES IN CHILDREN : A report of 30 cases

Karray A[1], Fredj H[1], Gasri B[1], Mokline A[1], Messadi A[1]
[1]Intensive care burn department, Traumatology and burn center, Tunisia, Ariana, Tunisia

Introduction
Electrical burn injuries are rare in pediatric population. Most often, they are associated with a poor prognosis. Their severity is linked to the risk of life-threatening complications and severity of functional sequelae.
The aim of this study was to determine the epidemiological profile of children admitted to our departement for electrical burn injuries.

Methods
A retrospective descriptive study was conducted over a period of five years (2018-2022) including all patients admitted for elecrical burns. Demographic, clinical, therapeutic and evolutionary data were collected and analyzed.

Results
Thirty children were admitted for electrical burns among 300 children admitted for burns (10%). The average age was 11 years [4 – 17]. Gender Ratio was 14. The majority were victims of high-voltage electrical burn injuries (93%cases). The most common circumstance was a domestic accident in 21 cases, a work accident in 7 cases (23%). The accident took place on the roof of the house in 17 cases. Total burn surface area was on average 20,5%. United burn standard was on average 32. Rhabdomyolisis was noted in 63% of cases. Ten amputations were performed. The mortality rate was 23%.

Conclusion
Pediatric electrical burn injuries still carries a high degree of mortality and limb amputaion. Education concerning parents and child may help to reduce the incidence of this dramatic accidental pathology.

O2.8.1

Predicting mortality in severe burns: comparison of four mortality prediction scores in the Croatian burn center

Skunca A[1], Mesic A[1], Zagorac D[1], Ciglar M[1], Sabo G[1]
[1]Sestre Milosrdnice University Hospital Center, Zagreb , Croatia

Aim: The study aimed to evaluate and compare the performance of four prognostic scores (Abbreviated Burn Severity Index (ABSI) score, Ryan score, Belgium Outcome Burn Injury (BOBI) score, and revised Baux score (rBaux) in the Croatian burn center.

Methods: The retrospective study included 120 severely burned patients (89 males, 31 females) with a total body surface area (TBSA) burned ≥ 20%, admitted to the burn intensive care unit between January 2016 and December 2022. Predicted mortality was calculated using the BOBI score, Ryan score, ABSI, and rBaux score. The relationship between the mortality and prediction scores was estimated using logistic regression. Model performance was assessed using the receiver operating characteristics (ROC) curve.

Results: The mean patient's age was 54.67±20.32 years, and the mean TBSA burned was 42.31±19.16 with the full thickness burns present in 101 patients (84.17 %). Inhalation injury was detected in 54 patients (45 %) with the mortality rate being 48 %. All prognostic models had statistically significant discriminating power with the area under the ROC curve (AUROC) of 0.78 (95 % CI 0.70-0.86) for rBAUX, 0.77 (95 % CI 0.69-0.85) for ABSI, 0.74 (95 % CI 0.66-0.82) for Ryan, and 0.73 (95 % CI 0.64-0.81) for BOBI. Comparing AUROC between scores showed the best-discriminating power for rBAUX ($p = 0.02$).

Conclusions: Calculating scores upon arrival can help with the early mortality risk assessment and treatment planning. Considering none of the scores showed a high AUROC value, more studies predicting mortality in severely burned patients are needed.

O2.8.10

Anhydrous ammonia burns: eyes and lungs pay a heavy price

Jennes S[1], Hoang X[1], Saidane G[1], Debry F[1]
[1]Grand Hôpital De Charleroi, Charleroi, Belgium

Aim
Anhydrous ammonia can cause severe eye and lung injuries leading to blindness and severe respiratory insufficiency, as well as cutaneous burns. We give a quick reminder of the most recent management of those victims.

Methods
We have reviewed 4 cases and the literature.

Results
All 4 patients have been burnt by anhydrous ammonia during their work. All were intubated. Three directly in the prehospital setting and one in the burn wound center after 3 days of High Flow Nasal Oxygen.
Dysphagia and odynophagia were also present. They were ventilated for 7 to 44 days. Two of them showed a prolonged hemorrhagic tracheobronchitis. Their eyes were also severely burnt.
The size of the cutaneous burn wounds varied between 2 and 35 %of TBSA, mainly third-degree burns.
An osteo-odonto-keratoprosthesis was performed in one patient with a good result for 2 years. A corneal transplantation was performed to other patient with mild success. Autologous plasma was poured in their eyes for the first weeks.
The two other cases had no permanent ocular damage.
One developed a respiratory insufficiency for many weeks that is still evolving.

Conclusions
Exposure to ammonia results in damage to the skin, eyes and aerodigestive tract. Ocular injuries may result in permanent visual loss. These four cases demonstrate that injury to the respiratory tract is life-threatening and may cause long-term obstructive lung disease.

O2.8.11

Burns in pregnancy : An epidemiological study of 26 cases.

Fredj H[1], Gasri B[1], Mokline A[1], Jemi I[1], Zarrouk S[1], Saad M[1], Messadi A[1]
[1]Burns intensive care department,Traumatology And Burn Center, Ben Arous, Tunisia

Aim: The aim of our study was to determine the epidemiological, clinical and evolutionary characteristics of burned pregnant women.
Methods: A descriptive retrospective study conducted over a period of 15 years (2007-2022), including all burned pregnant women admitted in the Burn Intensive care department at the trauma and burn center in Tunisia. Epidemiological, clinical and evolutionary data were collected and analyzed.

Results: Among 5364 patients admitted, 1517 were female. Twenty six pregnant females were included representing 7,5% of woman in the reproductive age. The mean age was 28 ± 5 years. The term of the pregnancy was greater than 24 weeks in 11 cases. The circumstances of burns were dominated by domestic accidents (n=19) followed by suicide attempt (n=5). It was mainly thermic flame burns (80%).The mean total burned surface area (TBSA) was 32%. Ventilatory support was required in 9 cases. The mean length of stay was 9 [2 ; 42] days. The maternal mortality rate was 31% (n=8) and fœtal mortality rate was also 31% (n=8).

Conclusions: The occurrence of burns during pregnancy is associated with high maternal and fetal mortality. Prevention through appropriate education of the pregnant woman is essential.

O2.8.2

Benefits of nebulized heparin for inhalation injury in burn patients

Habbachi N[1], Fredj H[1], Chroufa M[1], Mokline A[1], Messadi A[1]
[1]Centre de traumatologie et grands brûlés de Ben Arous, Ben Arous, Tunisia

Introduction:
Smoke inhalation injury increase overall mortality in burn patients. The contribution of heparin aerosolization remains controversial.
Aim:
To assess the contribution of heparin aerosolization in pulmonary burn injury.

Methods:
This was a prospective, case-control study conducted in the burn unit of Ben Arous from 2018 to 2022. Patients that were intubated for pulmonary burn injury were included. Respiratory injury was assessed by Murray LIS score. After inclusion, heparin was administered by nebulization for 7 days. The primary endpoints were the occurrence of ARDS and the kinetics of the LIS score and PaO2/FiO2. Secondary endpoints were duration of invasive mechanical ventilation and occurrence of ventilator-associated pneumonia (VAP). The group (Hep+) was compared with a retrospective group (Hep-) from the same center matched for age, burned skin area, severity scores, initial LIS and PaO2/FiO2.

Results:
During the study period, 25 patients were collected and compared with a control group (n=23).
Our study showed that the occurrence of ARDS and the LIS score evolution were comparable between the two groups. Nevertheless, heparin aerosolization improved the PaO2/FiO2 at H24 and H48.
The duration of mechanical ventilation was comparable.
In the Hep (+) group, the incidence of VAP was 44% (11) vs 73% (17) in the Hep (-) group with p=0.03.

Conclusions:
Our study shows that aerosolized heparin does not prevent the occurrence of ARDS but it allows to improve gas exchange during the first 48 hours. It could reduce the risk of VAP without an impact on the duration of invasive mechanical ventilation.

O2.8.3

RELEASING BURN INDUCED COMPARTMENT SYNDROM BY ENZYMATIC ESCHAROTOMY-DEBRIDEMENT: A CASE SERIES

Mataro I, Petroccione C, Avvedimento S, Villani R, d'Alessio R
[1]Hospital A. Cardarelli, Naples, Italy

Early treatment of circumferential burns of the extremities with a Bromelain-based enzymatic agent NexoBrid® (NXB) may represent a less traumatic and invasive procedure to reduce intra-compartmental pressure, replacing surgical escharotomy.
This case series of 23 patients describes the variation of compartmental pressure in patients with circumferential burns of the extremities treated with Nexobrid.
The primary End Point of treatment response was the post Nexobrid treatment releasing of pathological pressure to a level <30 mmHg. The second primary End Point was the time needed to reach a safe compartment pressure less than 30 mmHg.
An additional secondary End Point was the completeness of the eschar removal of the treated area.
This study cohort included 23 patients, 15males and 8 females aged between 19 and 75 years with a mean of 47.08 ± 2.12. All patients had deep circumferential burns with TBSA between 30% and 9% but without definite clinical signs of BICS (that were excluded and immediately surgically escharotomized).
Within 2 hours of NXB application the elevated pressures were completely released in all hands with practically normal pressures (<30 mm Hg). An additional small reduction was seen after 4 hours: 14 mm Hg (range 11 to 16 mm Hg) that is approximately 60% reduction from the initial value.
This study confirms that Nexobrid is effective in releasing Burn-Induced Compartment Syndrome elevated interstitial-compartment pressure to less than 30 mm Hg within 2 hours(primary end point). All burns were completely debrided (secondary EP) and no adverse events following NXB application were found.

O2.8.4

Investigating changes in serum uric acid level as a predictive biomarker of early acute kidney injury in patients with severe burns

Rimaz S, Mohtasham-Amiri Z, Rimaz S, Mobayen M
[1]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran, [2]Road Trauma Research Center, Guilan University of Medical Sciences, Rasht, Iran, [3]Anesthesiology Research Center,Department of Anesthesioly,Guilan University of Medical Sciences, Rasht, Iran, [4]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran

Aim: Acute kidney injury (AKI) is a most serious and common complication of sever burns developing in 0.5–30% cases. We aimed to study the role of serum uric acid(UA) for predicting the occurrence of early AKI.

Methods: This was a prospective observational study.The diagnosis and classification of AKI were performed according to KDIGO criteria.Serum uric acid(UA) and creatinine (Scr), estimated glomerular filtration rate (eGFR), C-reactive protein (CRP) and Base deficit(BD) were monitored within 48 hours after injury in 140 severely burned patients(TBSA=30%-80%).

Results: Within 2 days after burn injury,AKI occurred in 36 of 140 patients (Stage I in 25 cases, StageII in 10 cases and StageIII in one case).Uric acid, BD and CRP levels in the AKI patients were significantly higher than the No-AKI patients in the time intervals d0, d1, d2($P<0.005$). The positive correlation was also found between BD and CRP with UA after injury in AKI patients.According to the ROC curves, the UA level(AUC: 0.967, 95% CI: 0.943–0.991) soon after injury (d0) compared with the traditional renal function indicator SCr (AUC: 0.780,95% CI:0.682–0.879), presented more valuable for the prediction of early AKI in the early stage of severe burns. In addition, in this study,serum uric acid level higher than 3.95mg/dl soon (6–8 h) after injury was a helpful marker for the prediction of occurrence of early AKI.

Conclusions: The results suggest that the monitoring of UA level soon after the severe burns may be a useful biomarker for predicting the occurrence and progression of early AKI.

O2.8.5

Prognostic factors in toxic epidermal necrolysis

Fredj H[1], Aloui A[1], Mokline A[1], Zarrouk S[1], Jemi I[1], Gasri B[1], Saad M[1], Messadi A[1]
[1]Burns intensive care department, Traumatology And Burn Center, Ben Arous, Tunisia

Aim : The aim of our study was to determine the predictive factors of mortality in patients admitted for management of toxic epidermal necrolysis (TEN).

Methods :
IT was a retrospective and descriptive study conducted within the intensive burn care unit in Tunisia, over a period of 10 years (January 2013- January 2023), including all hospitalized cases of TEN. Demographic, clinical and evolutionary data were collected. Uni and multivariate analysis was performed by SPSS22.

Results :
Fifty cases of NET were included. The sex ratio (H/F) was 0.56. The mean age was 41±15 years. The average skin area detached was 38±18, 4% .Mucous membrane was affected in all of cases. Systemic signs occurred in 74% of cases especially renal, respiratory and hematological disorders. The mortality rate was 50% (n=25). Death was secondary to septic shock in all cases. Age >43 years (OR :2.9 ; CI [1,3,2], ; P=0.03 ; Spc : 0.28 ; se : 0.85), a detached skin surface area >39% (OR :2.18 ; CI [1.73-4] ; P=0.02 ; Sp:0.12, se:0.84) ,a delay in resuscitation management >5.5 days (OR : 4.2; CI:[1.8-3.16]; P=0.04; Sp: 0.23; se: 0.23) ,the occurrence of infectious complications (OR:4.1;CI[1.1-4.3], P<0.001), and the use of mechanical ventilation (OR:6.76; CI[1.04-2.8], P=0.04) were found as factors of poor prognostic in multivariate study.

Conclusions : NET is associated with high mortality. Early management in intensive care and compliance with asepsis rules could improve the prognosis.

O2.8.6

Lithium polymer battery fire as a new cause of Polymer Fume Fever

Nash C[1], Berry P, Martin N
[1]St Andrew's Centre for Plastic Surgery and Burns, Broomfield Hospital, Chelmsford, Essex, , United Kingdom

Aim
Growing popularity of e-bikes and e-scooters has contributed to lithium battery-related fires being the fastest growing fire risk in London, but their combustion may cause a unique form of inhalation injury. We discuss an unusual case of a man who experienced physiological derangement following a lithium battery inhalation injury and review the associated literature.

Methods
A 19-year-old man admitted with inhalation injury and 15% TBSA burns, caused by ignition of an e-bike lithium polymer battery charging in his bedroom. Bronchoscopy revealed erythaema and little soot, but he soon developed severe pyrexia, rigors, hypertension, tachycardia, and lethargy.

Results
The National Poisons Information Service was contacted and suggested that the symptoms were similar to the occupational diseases Metal Fume Fever (MFF) and Polymer Fume Fever (PFF), although, PFF is normally reported in the pyrolysis of polytetrafluoroethylene (PTFE)/ Teflon®. As serum lithium levels remained undetectable, MFF is the less likely cause. Symptoms were managed conservatively and resolved within 48 hours.

Conclusions
Further literature review revealed no previous cases that related PFF to lithium battery fires. However, there is evidence that the thermal degradation of lithium polymer batteries releases hydrogen fluoride and phosphoryl fluoride; chemicals likely to be responsible for PFF. We therefore conclude this to be the first reported case of PFF caused by the ignition of a lithium polymer battery. With the increasing use of larger lithium batteries in our homes, it is important for those who work in Burns Services to be aware of this unusual syndrome.

O2.8.7

The Clinical Differentiation of Blood Culture-Positive and Negative Sepsis in Burn Patients: A retrospective cohort study

Kym D[1], Yoon J[1]
[1]Hangang Sacred Heart Hospital, Hallym University Medical Center, Seoul, South Korea

Aim: Investigate clinical differences between blood culture-positive and-negative sepsis in burn patients to improve understanding of sepsis pathophysiology and epidemiology.

Methods: Retrospective study of 1643 adult patients (≥18 years) diagnosed with sepsis, divided into two groups based on blood culture results within one week of diagnosis, admitted to a burn intensive care unit between January 2010 and December 2021.

Results: pH, platelet count, bicarbonate, and haematocrit were significant in both the positive and negative groups. Lymphocyte count and blood urea nitrogen were significant only in the positive group, while lactate dehydrogenase was significant in the negative group. Common gram-negative bacteria included Acinetobacter baumannii, Pseudomonas aeruginosa, and Klebsiella pneumoniae, while common gram-positive bacteria were Staphylococcus aureus and S. epidermidis. Carbapenem resistance was associated with unfavorable prognosis in gram-negative bacteria, except for Pseudomonas aeruginosa.

Conclusions: pH, platelet count, bicarbonate, and haematocrit were routine biomarkers with statistical significance in both groups. Lactate dehydrogenase was significant in the blood-positive group, while red cell distribution width and lymphocyte count were significant in the negative group. Gram-negative bacteria, including Acinetobacter baumannii, Klebsiella pneumoniae, and Pseudomonas aeruginosa, were the most common causes of sepsis. Carbapenem resistance was linked to unfavorable outcomes.

O2.8.8

eMission, an open-source electronic health record; an effort to improve quality and safety on burn & reconstructive surgery short term medical missions

Alfille P[1,2], Fuzaylov G[1,2], Fuzaylov G[1,2,3]
[1]Massachusetts General Hospital, Boston, MA, United States, [2]Harvard Medical School, Boston, MA, United States, [3]Doctors Collaborating to Help Children, Boston, MA,

Aim
We describe a novel electronic health record (EHR) eMission, that is open source, low-resource, easily deployable and robust in remote locations, facilitates in-mission patient care, and post-mission analysis.

Methods
eMission is a web based EHR. Information is stored and accessed locally in the browser for offline usage, and periodically sent encrypted to a central database when internet is available for synchronization. On the web-application, patients can be identified with a picture, name, or DOB. A print-out is formed for each patient that includes their picture, name, dob, and a QR barcode.

Information on each patient is split between sections navigated on a home-screen that includes: Demographics, Medical History, Notes, and Operations. Where supported by phones, voice-to-text is available, as well as uploading of pictures to ease data entry. The web application also allows for post-hoc analysis and data archiving without manually searching through individual charts via export in universal spreadsheet file format.

Results/Conclusions
Short term medical missions (STMMs) are a common approach to address the lack of access to surgical and anesthesia care in much of the under-resourced world. However, documenting the productivity, safety, and long-term outcomes is a continuing challenge. As a solution, we offer eMission, a program that is smartphone/mobile based for use in austere environments, with computer-based data storage for ease of entry and post-hoc analysis, and designed utilizing simple user friendly interface and patient safety features. This program has been utilized successfully for surgical burn and reconstructive missions in Ukraine, Peru, and Colombia.

O2.8.9

Association of platelet count and mortality in severely burned adults

Mesić A[1], Škunca A[1], Zagorac D[1], Ciglar M[1], Magdić Turković T[1]
[1]Department of Anesthesiology, Intensive Care and Pain Medicine, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

Aim: Analysis of platelet count in severely burned patients and its association with mortality.

Methods: Patients eligible for this study were adults with a total body surface area burned of more than 20% who were admitted to the Burn intensive care unit from January 2016 to December 2022. Exclusion criteria were electrical injuries, hospital stay < 3 days, and missing data. 93 patients were included in the study. Platelet count was analyzed within 7 days after the injury. Thrombocytopenia was defined as a platelet count of less than 150 x 109/L.

Results: Thrombocytopenia was found in most patients (80%), but it was not associated with mortality. Platelet count on the 7th day after the injury showed a statistically significant difference between deceased and survived patients, as well as frequently used rBaux score ($p<0.0002$). Considering that the odds ratio for rBaux score was estimated at 1.044 (95% CI of 1.020–1.070) and for platelet count on the 7th day 0.987 (95% CI of 0.978-0.995) it may be concluded that with an increase of 10 rBaux points the odds of a lethal outcome are expected to increase by 54 %, while with a decrease of platelet count by 10x109 the odds of a lethal outcome are expected to increase by 44 %. The area under the ROC curve was 0.82.

Conclusions: Platelet count on the 7th day represents a simple and easily accessible test and when combined with the rBaux score is a strong predictor of mortality.

O2.9.1

An implementation study on thermal imaging for burn wound assessment using the Consolidated Framework for Implementation Research and iterative RE-AIM approach

Pijpe A[1,2,3], de Haan J[1], Stoop M[1,2,3], van Zuijlen P[1,2,3,4,5]
[1]Association of Dutch Burn Centers, Red Cross Hospital, Beverwijk, The Netherlands, [2]Amsterdam UMC location Vrije Universiteit Amsterdam, Plastic, Reconstructive and Hand Surgery, Amsterdam, The Netherlands, [3]Amsterdam Movement Sciences, Tissue Function and Regeneration, Amsterdam, The Netherlands, [4]Department of Plastic, Reconstructive and Hand Surgery, Red Cross Hospital, Beverwijk, The Netherlands, [5]Amsterdam UMC location University of Amsterdam, Paediatric Surgical Centre, Emma Children's Hospital, Amsterdam, The Netherlands

Aim: Thermal imagers provide an opportunity for accessible diagnostic tool to increase accuracy of burn wound assessment. This mixed methods study aimed to assess barriers and facilitators, design implementation strategies, and guide the implementation process of thermal imaging in the outpatient clinic of a burn centre.

Methods: This study was conducted between 09-2022 and 02-2023 in the Red Cross Hospital in Beverwijk-NL. Phase 1 was planning and included a literature search. In Phase 2, semi-structured interviews guided by the Consolidated Framework for Implementation Research (CFIR) were conducted, to identify barriers and facilitators. Based on the barriers, implementation strategies were developed with the CFIR-ERIC Matching Tool, and disseminated to support uptake of the thermal imager. In Phase 3, thermal imaging was implemented in daily practice, and an iterative RE-AIM approach was used to evaluate the implementation process.

Results: Common facilitators included CFIR constructs Complexity, Relative Advantage, and Needs and Resources. Common barriers were Knowledge and Beliefs, Compatibility, and Evidence Strength and Quality. Six implementation strategies were used: create a formal implementation blueprint, promote adaptability, develop educational materials, facilitation, conduct ongoing training, and identify early adopters. Throughout the implementation process Compatibility and Available Resources remained barriers, resulting in low ratings on RE-AIM dimensions.

Conclusions: This study identified CFIR constructs that impact implementation of thermal imaging in our outpatient clinic and effective implementation strategies. Findings of this study could be leveraged to guide implementation of innovations like thermal imaging in burn care, and to guide improvement of technicalities and usability in clinical practice.

O2.9.10

Can fasciotomy prevent amputation of a burned limb?

Jaafar N[1,2], Fredj H[1,2], Ben Saad M[1,2], Mokline [1,2], Messadi A[1,2]
[1]Faculty Of Medicine Of Tunis, University Tunis El Manar , tunis, tunisia, Tunis, Tunisia, [2]Intensive care burn department, Traumatology and burn center, Tunisia, Ben Arous , Tunisie

Background:
The management of thermal and electrical circumferential burns of the limbs often requires the use of fasciotomy in hope of saving the limb.

Aim:
Our study aims to determine the incidence of fasciotomy in burn patients and to assess its impact on limb survival.

Methods:
Retrospective study over a two-years period (2021-2022). Burned patients who had a fasciotomy were included. Were collected epidemiological, clinical data concerning the nature burns, the site, the delay of the fasciotomy and the outcome of the limb.
The comparison of patients with thermal burns (G1) was made with patients with high-voltage electrical burns (HVEB) (G2).

Results:
Six hundred fifty-four patients were enrolled. 33 patients had at least one fasciotomy (incidence of 5%). The median age was 33 years with a gender ratio of 5.6. The median time to admission after burns was 16 hours. The circumstances were dominated by domestic accidents (n=13) and occupational accidents (n=8). The median total body surface area (TBSA) was 29.5%. G1 included 16 patients versus 17 patients in G2. The most affected limbs were the upper limbs. The progression to limb amputation was significantly higher (n=0 in G1 versus n=10 in G2, $p<0.001$). For G2 : 8 patients had an early fasciotomy of which 4 patients had later amputations. The median length of stay was higher in G2 (21vs 13 days , $p<0.05$).

Conclusion:
Fasciotomy in thermal burns saved the limb in all cases. In the case of electrical burns, it saved the limb in only 40% of cases.

O2.9.11

Clinical experience of omega 3 fish graft in full thickness wounds

Aballay A[1], Bregg J[1], Sturges M[1], Bell B[1]
[1]Allegheny Health Network, Pittsburgh, United States

Aim: Fish skin graft (FSG) has been advocated in wound care to support epithelialization and healing by secondary intention. FSG is a relatively new and promising matrix with versatility to manage varying clinical treatment goals. FSG is minimally processed, has the utility to augment cell migration and neovascularization, and is rich in Omega3 fatty acids. Another proposed indication for this xenograft is as bridge therapy when dealing with full-thickness wounds by decreasing the defect's size and supporting wound bed preparation for closure. Therefore, this case series primarily aims to investigate FSG as a bridge therapy for full-thickness wounds associated with burns, trauma, and surgical wounds.

Methods: In this case series, several patients of varying ages and ethnicity with full-thickness wounds of different sizes related to burns, trauma, and surgical wounds had FSG applied to minimize the depth of deep defects. The changes observed in wound characteristics, depth, infection rate, and graft take were evaluated and tracked.

Results: Overall, the cohort of patients treated with FSG positively affected wound appearance without an increase in infection rate, autograft loss, or other complications and were advanced to closure/next therapy within 2 weeks on average.

Conclusion: In this case series, the usage of the fish skin graft facilitated the management of these wounds and proved to be autograft sparing, effectively decreasing the size of the wound defects in a short period of time. This lead to a decrease length of stay. The results validate using FSG in clinical practice when managing these challenging wounds.

O2.9.2

BTM (biodegradable temporising matrix, Polynovo) proofs reliable in the treatment of large pyroclastic burns following the White Island volcano eruption in New Zealand

Maitz P[1,2,3], O'Hara J[3], Maitz J[1,2,3]
[1]University of Sydney, Sydney, Australia, [2]ANZAC Research Institute, Sydney, Australia, [3]Concord Hospital, Sydney, Australia

AIM: demonstrate the surgical planning, procedures and results of the use of BTM for pyroclastic burns >40% TBSA. Pyroclastic burns are rare and combine large thermal burn injuries with chemical and toxic substrate deposition in the wounds and lungs of the victims.

METHODS: Following the White Island volcano eruption in 2019 in New Zealand patients with Australian nationality were repatriated to Sydney after intubation and stabilisation. Information exchange with our New Zealand colleagues and a literature search revealed similar surgical planning guidelines as for large thermal burns with the emphasis on extreme aggressive eschar debridement. Total eschar debridement of all burn wounds (except burned digits) was achieved in a single procedure in all patients and all wounds were immediately covered with BTM and Acticoat dressings; no skin grafting was undertaken in the first procedure. All patients improved within the first 24 hours following total eschar removal in terms of haemodynamics and ventilator requirements. Debridement and skin grafting to all burned digits was undertaken in the following days. After integration of BTM and neo dermis formation between week 2 and 3 staged skin grafting was undertaken.

RESULTS: BTM integrated in all patients, delamination of the bi-layered BTM and skin grafting could be undertaken after 2 weeks. All skin grafts healed with no revision, all patients were discharged within 70 days.

CONCLUSION: BTM proofed easy to use, reliable to integrate and resulted in pliable reconstruction of full thickness pyroclastic burn wounds.

O2.9.3

Randomised controlled clinical comparison of three wound dressings

Lumenta D[1], Hecker A[1], Michelitsch B[1], Friedl H[2], Kamolz L
[1]Medical University Of Graz, Graz, Austria, [2]Graz University of Technology, Graz, Austria

Aim
Comparing a hydroactive nanocellulose-based, silver-impregnated and ibuprofen-containing foam wound dressings on split-thickness skin graft donor sites.

Methods
Inclusion of 46 patients scheduled for elective surgery and assessed criteria were wound healing (time-to-healing, Hollander Wound Evaluation Scale), pain level (Visual Analogue Scale), handling (ease of use), and scar quality (Patient Scar Assessment Scale, Vancouver Scar Scale) after 3, 6 and 12 months.

Results
All dressings fared well (wound healing) with only minor statistically, but less clinically relevant differences for pain level favoring the ibuprofen-containing dressing ($p = 0.002$, deltaAIC = 8.1), and user friendliness in favor of nanocellulose. Hydroactive nanocellulose and the ibuprofen-containing foam revealed statistically relevant better scar appearances as compared to the silver wound dressing ($p < 0.001$, deltaAIC = 14.77).

Conclusion
The dressings in all included patients performed equally well, with the detected statistical differences hinting future directions of clinical relevance.

O2.9.4

Rapid vascularized collagen/elastin matrix MatriDerm® offers multiple new surgical options in burns and trauma

Öhlbauer M[1], Wallner B
[1]BG Trauma Center Murnau, Murnau, Germany

Despite successful defect coverage by complex flaps,especially wounds with exposed bradytrophic tissues are highly susceptible to surgical revision. This has led to the development of dermal matrices in order to improve quality of reconstructed tissue.
MatriDerm®, a matrix of collagen and elastin was first used in 1mm thickness in one-stage and in 2mm in two-stage procedures. Due to the rapid vascularisation of this matrix more and more former 2 mm-two-stage procedures showed to be able to be performed one-stage. Since 2021 MatriDerm® is available even in 3 mm thickness.

93 patients treated between 2014 and 2020 in terms of severe soft tissue defects using STSG in combination with MatriDerm® in one or two stage procedures were included in a retrospective study. The healing was measured by assessment of the take rate. Outcome quality of the scar tissue was assessed using Vancouver Scar Scale more than 24 months postoperatively.

Overall healing rate (take rate ≥ 75%) was 84%. The majority of postoperative events included healing disturbances such as remaining defects, necrosis, or delayed healing.
Two-years follow up of these procedures showed an excellent functional outcome: no areas with unstable scars occurred, no surgical scar revisions were required. The patients were still able to wear normal footwear, clinical gait analysis showed perfect functional outcome.

The application of collagen-elastin matrix MatriDerm® in patients with exposed bradytrophic tissue after severe burn or traumatic injuries treated so far can be recommemded as an excellent reconstruction method, independent of one or two stage procedures.

O2.9.5

Balancing regenerative medical approaches and flap surgery in the treatment of burn injuries and their sequelae

Kim B[1], Barbon C, Grünherz L, Lindenblatt N, Giovanoli P
[1]University Hospital Zurich - Department of Plastic Surgery and Hand Surgery, Zurich, Switzerland

Aim
Regenerative medicine offers legitimate solutions in plastic and reconstructive surgery. The treatment of thermally inflicted wounds in particular may benefit from the less invasive regimen. Herein, the value of classic reparative techniques including flap surgery and the merits of regenerative medicine for acute injuries and post-injury sequelae are discussed.

Methods
Acute burn injuries (n=8) were treated with isolated fat-derived stromal cells and growth factors upon enzymatic debridement and the clinical outcome was evaluated. Furthermore, the use of various regenerative dermal substitutes in the treatment of burn scars was investigated (n=30). Outcomes were compared with the standard treatment consisting of skin grafts for acute injuries and flap surgery for burn scar reconstruction.

Results
The use of fat-derived stromal cells and growth factors still does not provide stable outcomes and often result in re-excision and skin grafting. No specific confounders for therapy failures were identified. Dermal substitutes showed favorable vascularization and granulation in static areas. For the reconstruction of joints the neck, however, the failure rate was high. Here, thin perforator flaps areas were utilized.

Conclusion
Based on the current experience, no reliable regenerative medical alternatives to skin grafting for the treatment of deep acute burn injuries are accessible. Dermal substitutes offer feasible solutions for static areas and can act in salvage situations. For critical areas including joints and the neck, thin perforator flaps are the mainstay in the treatment course. In the future, advanced tissue engineering concepts such as epidermal-dermal constructs and other composite solutions may render novel opportunities.

O2.9.6

An Innovated Elastic Compression Hemostasis Technique for Extremity Excision in Patients with Extensive Burns: A Prospective Clinical Randomised Controlled Trial

Shen C[1], Liu X[1], Zhang B[1], Yuan H[1]
[1]Chinese People's Liberation Army General Hospital, Beijing, China

Aim: To introduce an innovated elastic compression hemostasis technique for extremity excision in extensively burnt patients and investigate its effectiveness.

Methods: Ten patients were included and divided into two groups: control group (4 patients, 12 extremities) receiving the conventional hemostasis technique; experimental group (6 patients, 14 extremities) receiving the innovated technique. General data of the patients were collected, excision size measured, hemostasis time recorded, average blood loss per 1%TBSA of the excised wound calculated, incidence of subcutaneous hematoma and take rate determined.

Results: There was no statistical difference in the baseline data between the two groups. Average blood loss per 1%TBSA of the excised wound in the upper and the lower extremities were (62.1±11.5)mL and (35.6±11.0)mL in the experimental group, significantly less than (94.3±6.9)mL and (82.3±6.2)mL in the control group; a reduction of 34.1% and 56.8% respectively. Hemostasis time in the upper and the lower extremities were (5.0±0.7)min/1%TBSA and (2.6±0.3)min/1%TBSA respectively in the experimental group, significantly less than (7.4±0.6)min/1%TBSA and (4.0±0.9)min/1%TBSA in the control group; a reduction of 31.8% and 34.9% respectively. The incidence of subcutaneous hematoma were 7.1% and 8.3% and the take rate (85.9±6.0)% and (86.5±4.8)% in the experimental and the control group respectively, with no statistically significant differences.

Conclusions: The innovated elastic compression hemostasis technique is a reliable new method that significantly reduces blood loss during extremity excision in patients with extensive burns and is worth wider understanding and application.

O2.9.7

The use of biostatic human amnion and platelet-rich plasma in topical treatment of toxic epidermal necrolysis-A case report

Strzelec P[1], Ziółkowska K[1], Klama-Baryła A[1], Łabuś W[1], Wielgórecki A[1]
[1]Dr. Stanisław Sakiel Centre For Burn Treatment In Siemianowice Śląskie, Siemianowice Śląskie, Poland

Aim: Toxic epidermal necrolysis (TEN) (also known as Lyell syndrome) and Stevens-Johnson syndrome (SJS) are life-threatening mucocutaneous blistering diseases. They are characterized by generalized blisters and epidermal inflammation, most likely resulting from the administration or interaction of medicines. Aim of the work was to report potential new method in the treatment of TEN.

Methods: This article presents a case report of a 35-year-old man suffering from TEN covering about 95% of his body surface. Lesions occurred in the patient during antiepileptic therapy, after taking simultaneously amoxicillin (with clavulanic acid) and naproxen followed by lamotrigine treatment. Standard general treatment was performed. Intravenous feeding was necessary. Due to acute respiratory failure, the patient required mechanical ventilation. Two methods were combined in topical treatment: application of platelet-rich plasma (PRP) and a simultaneous biostatic human amnion transplant.

Results: In the presented case, the combination of both methods contributed to a significant acceleration of wound healing. After the application of PRP and biostatic amnion transplantation, the healing of wounds on the back and posterior surfaces of the legs was completed after six days. The surgical treatment most probably contributed to a significant acceleration of wound healing.

Conclusion: The case report shows that topical TEN/SJS treatment with biostatic human amnion and PRP has a positive clinical effect and may be a new method of treatment of TEN.

O2.9.8

Comparison of polyhexanide versus enzyme alginogel wound dressing: a retrospective study.

Claes K[1], De Decker I[1], De Coninck P[1], De Mey K[1], Monstrey S[1]
[1]Ghent University Hospital, Ghent, Belgium

Aim
The purpose of this study was to compare the bacterial load and healing time of burn patients treated with Prontosan® Wound Gel X (WGX) with patients treated with our standard-of-care (Flaminal®).

Methods
All patients with one or more region of interest (ROI), determined by laser Doppler imaging (LDI), and treated with WGX, were compared with a similar group of patients treated in the same period (June 2019 – July 2020) with Flaminal®. The ROI corresponded to different healing potentials (HP). Given the standard-of-care wound swabs were taken regularly.

Results
Thirty patients (67 ROI) were treated with WGX. These ROI were compared with 31 patients (93 ROI) treated with Flaminal®. The distribution of HP categories (HP<14d, HP14-21d and HP>21d) in both groups was comparable (p=0.733).
There was a significantly (p<0.001) reduced number of positive swabs for P. Aeruginosa in the WGX group (5 vs. 29; 7.46% vs. 31.18%). Additionally there was a significantly (p<0.01) reduced number of positive swabs in the WGX group for Staph. Aureus (5 vs. 29; 7.46% vs. 31.18%). None of the patients suffered from wound infections.
In the subgroup analysis of conservatively treated patients (HP>21d; 35 WGX and 45 Flaminal®), there was no statistically significant difference in healing time (mean 22.18±12.05d vs. 19.13±6.06d).

Conclusion
This retrospective study confirms the broad spectrum of activity of WGX against Gram+ and Gram- bacteria. Although the incidence of PA and SA was lower in the WGX group, a significant difference in healing time could not be shown.

O2.9.9

Closing the gap: healing acute complex wounds using an acellular dermal substitute

Van De Warenburg M[1], Vehmeijer M[1], De Jong T[1], Hummelink S[1], Ulrich D[1]
[1]Radboudumc, Nijmegen, Nederland

Aim To assess the use of Glyaderm in full thickness skin defects of different etiologies.

Methods
In this prospective case series, 28 adult patients with acute complex deep soft tissue defects resulting from different etiologies will be treated with Glyaderm, an acellular dermal substitute [1]. Glyaderm is applied in either a one- or two-stage procedure with a split thickness skin graft for epidermal coverage. Primary outcomes will be graft take in percentage of the total covered wound area and time to complete wound closure.

Preliminary results
Currently, 14 patients have been included and completed the follow-up period. The mean age of the included population is 59 years (28-83). Etiologies of the acute complex wounds consist of defects after: oncological surgery (28.6%), debridement of fasciitis necroticans (14.3%), donor sites after free flap reconstruction (28.6%), trauma (21.4%) and debridement of osteomyelitis (7.1%). Mean affected TBSA is 1.7% (0.2-12%).
5-7 days after application of Glyaderm, a mean take rate of 87.4% (0-100) was observed. Mean time for the wounds to close was 35 days (6-98 days). In 85.7% (n=12) of the included cases, no complications have been observed. In one case (7.1%), an infection occurred after application of Glyaderm, leading to complete loss of the graft. In one case (7.1%) complete loss of the graft occurred because of dehiscence of a free flap close to the wound area.

Conclusion
Glyaderm may prove to be a valid and easy to use reconstructive option for defects not suitable for immediate skin grafting.

O3.1.1

Predictors of the long-term quality of life of paediatric patients after non-severe burn injuries

Allahham A[1,2], Fear M[1,2], Wood F[1,2,3], Martin L[1,2,4], Cooper M[4]
[1]University Of Western Australia, Perth, Australia, [2]Fiona Wood Foundation , Perth , Australia, [3]Burn Service of Western Australia , Perth, Australia, [4]Perth Children's Hospital, Perth, Australia , [5]Telethon Kids Institute, Perth, Australia

Aim - To: 1. Investigate the epidemiology of paediatric burn injury in Western Australia and determine which demographic and clinical factors correlate with low quality of life during recovery, and 2. Assess differences in scoring the psychosocial function between patients and parents.

Methods - Retrospective cohort of paediatric patients with non-severe burns who were assessed using the Paediatric quality of life survey (PedsQL). PedsQLs consist of a parent report and a patient report with a physical function domain (PF) and a psychosocial function domain (PSF).Demographic and clinical data was also collected from the patients.

Results -For the first aim, parent-report scores were significantly different between age groups (PF: $p = 0.002$, PSF: $p = 0.001$, respectively), burn cause (PF: $p = 0.004$, PSF: $p = 0.005$, respectively), and socioeconomic status groups for the PSF (patient: $p = 0.015$, parent: $p = 0.032$, respectively), and 16.46% of paediatric burn patients had critically low quality of life scores. The second aim showed that during early recovery, parents reported poorer PSF for younger children ($p = 0.01$), higher socioeconomic status ($p = 0.05$), and significantly different scores for female patients ($p < 0.01$). In the late recovery cohort, only the age at burn had an effect where parents had lower scores for older patients ($p = 0.03$).

Conclusion - This data will allow health professionals to accurately assess patients' quality of life to provide them with services that can aid in their recovery.

O3.1.2

Developing and Piloting Palliative Care Practice Recommendations in the Burn Intensive Care Unit: A Quality Improvement Project

Bayuo J[1], Baffour P
[1]The Hong Kong Polytechnic University, Hung Hom, Hong Kong

Aim: To develop and pilot palliative care practice recommendations in the burns intensive care unit of a tertiary healthcare facility.

Methods: A four-phased multi-method design was employed: 1) a scoping review to ascertain the role of palliative care in burns management, 2) post-bereavement interviews with family members and burn care staff, 3) consultative meeting with palliative and burn care practitioners to formulate the practice recommendations, and 4) piloting the practice recommendations using a prospective observational approach. For the pilot phase a nurse/ research assistant was assigned to undertake participant observation following staff training on the practice recommendations. A checklist based on the practice recommendations was created to enable the nurse to record the observations from January 2020 to December 2022.

Results: Palliative care practice recommendations in the burn unit should focus on 1) shared decision-making and communication, 2) role support for family caregivers, 3) holistic symptom management at the end of life, 4) bereavement and post-bereavement support for family members 5) post-bereavement support for burn care staff. For the pilot phase, it was observed that of the 170 burn patients admitted, 66 persons died. Although several aspects of the practice recommendations were observed, post-bereavement support, symptom management at the end of life, and collaboration across teams are still limited.

Conclusion: There is still room to improve the integration of palliative care in our burn unit. Particularly, there is a need for ongoing staff training and collaboration with palliative care staff.

O3.1.3

Partners' social support associated with depressive symptoms in burn survivors

de la Parra N[2], Hofland H[1], Van Loey N[1]
[1]VSBN Maasstadziekenhuis, Rotterdam, the Netherlands, [2]Red Cross Hospital, Beverwijk, the Netherlands

The aim of this study was to investigate the influence of the partner's social support on depressive symptoms. This multi-centre study included 158 adult burn survivors with a partner. Burn survivors completed the Illness Invalidation Questionnaire, including two subscales: "discounting behaviour" and "lack of understanding" and Beck's Depression Inventory at 3 and 6 months postburn. Linear regression was used to analyse data. Depressive symptoms 6 months post burn were significantly associated with discounting behaviour (p = .001), lack of understanding (p = .017), TBSA burned (p= .04) and gender (p= .002). When controlling for early depression, lack of understanding was the only significant predictor (p = .03). In conclusion, partner's discounting behaviour was associated with both early depressive symptoms, suggesting these may be (stable) patterns. Lack of understanding was a risk factor for the maintenance of depressive symptoms, indicating that promoting an understanding attitude may yield beneficial effects on depressive symptoms in the aftermath of a burn injury. This study indicates that early intervention is important, specifically targeting partners on how to support their partner.

O3.1.4

Life satisfaction after burns

Hutter M[1], Smolle C[1], Kamolz L[1]
[1]Medical University Of Graz, Graz, Austria

Objectives: Besides health-related quality of life, also life satisfaction is an important outcome parameter to evaluate long-term consequences of burn injuries on a patient's life. We conducted a systematic review on life satisfaction after burn injuries among adult burn victims in order to evaluate currently used assessment methods and get an insight on recovery patterns.

Methods: PubMed, EMBASE, Medline, Cochrane Library were searched systematically for studies covering life satisfaction after burn injuries among adult burn victims. The screening resulted in the inclusion of 18 studies.

Results: The Satisfaction With Life Scale (SWLS) was the most commonly used assessment tool. Others included The Life Satisfaction Index A (LSI-A) and a non- standardized tool. Recovery patterns varied between studies and studies looked at several different potential influencing factors.

Conclusion and implications of key findings: Live satisfaction is an increasingly used outcome parameter to assess mental wellbeing after burn injury. There is predominantly consent on the assessment tools. This opens the possibility on further comparative investigation in the future to better understand factors that influence life satisfaction after burn, so that this knowledge can be used to improve patients' recovery.

O3.1.5

Self-harm in burn patients register-based and in medical records in Finland 2011-2020.

Palmu R[1], Purola L, Vuola J
[1]Helsinki University Hospital, Helsinki, Finland, [2]Oulu University Hospital, Oulu, Finland, [3]Finnish Institute for Health and Welfare, Helsinki, Finland

Aim: To collect data of self-harm burn patients on a national level in Finland and analyze the characteristics of them.

Methods: First, we went through The National Care Register for Health Care (Hilmo) from 2011 to 2015 to find all patients in Finland having both burn and self-harm ICD10 codes. Then we investigated the medical records of all patients treated in the National Burn Center (NBC) in Helsinki 2011-2020. The patients admitted to hospital because of self-harm burn injuries were compared to those without self-harm injuries.

Results: Hilmo register consisted of all-together 3391 adult burn patients admitted on any health care unit during the study period. Compared with non-self-harm patients, self-harm burn patients (N=82) had lower mean age and longer hospitalization. According to medical records self-harm patients (N=39) admitted to NBC in 2011-2020 had pre-burn history of psychiatric care and one-third of them previous self-immolation. Men had more severe burns than women (mean TBSA 46% vs. 14%) and six of men died during the first 48 hours of care but none of the female patients.

Conclusions: Register-based, self-harm burn patients were younger and with longer hospitalization at all care levels than other burn patients. In medical records of hospitalized self-harm burn patients, we found clear gender difference in severity of the burn injury and mortality. Recognizing high-risk patients pre-burn could have a strong preventive impact.

O3.1.6

Lidocaine infusion has a 25% opioid-sparing effect on background pain after burns: A prospective, randomised, double-blind, controlled trial

Abdelrahman I, Steinvall I[1], Elmasry M[1], Sjöberg F[1]
[1]Linköping University Hospital, Linköping, Sweden

Title
The pain of a burn mainly results from the inflammatory cascade that is induced by the injured tissue, and is classified as background, breakthrough, procedural and postoperative pain. High doses of opioids are usually needed to treat background pain, so its management includes a combination of types of analgesia to reduce the side effects. Lidocaine given intravenously has been shown in two small, uncontrolled studies to have an appreciable effect on pain after burns.

Aim
This prospective double-blind controlled trial was designed to examine and quantitate the opioid-sparing effect of a continuous lidocaine infusion for the treatment of background pain in burns.

Methods
Adult patients injured with burns of >10 total body surface area burned (TBSA%) and treated with a morphine based (PCA) were randomised to have either lidocaine infusion starting with a bolus dose followed by continuous infusion or a placebo infusion, for seven consecutive days. Total daily consumption of opioids and amount of pain (visual analogue score, VAS) were recorded.

Results
We included 19 patients, 10 of whom were given a lidocaine infusion. There were no differences between groups in VAS, TBSA%, time of enrolment to the study since the initial burn, or duration of hospital stay. The opioid consumption in the lidocaine group declined by roughly 25% during the period of the study.

Conclusions
Intravenous infusion of lidocaine was safe and had a 25% opioid sparing effect in burns when used to treat background pain.

O3.1.7

Optimism and the extent of pain during hospital admission predict pain after discharge

Balland C[1], van Loey N[2], Hofland H[2], van Meijel B[3], de Jong A[1]
[1]Rode Kruis Ziekenhuis, Beverwijk, Netherlands, [2]Maasstad Ziekenhuis, Rotterdam, Netherlands, [3]UMC Amsterdam - VUmc, Amsterdam, Netherlands

Aim: The aim of this study was to investigate if in-hospital background pain, procedural pain, pain-related anxiety, optimism and posttraumatic stress symptoms predict pain after discharge.

Methods: The study was a multi-center prospective longitudinal cohort study of adults admitted to five burns centres. Pain after discharge was measured during 14 consecutive days. Burn survivors reported overall pain per day on a Numeric Rating Scale (NRS). The mean sum score of all available measurements was used, which was dichotomised (cut-off point > 2 indicating pain after discharge). Two logistic regression analyses were used to test predictors of pain after discharge, one using mean procedural pain (PP) and one using mean background pain (BP) during admission.

Results: The results showed that, for the model using BP, burn survivors reporting pain after discharge had higher BP during admission ($p<0.001$). The model including PP, burn survivors reporting pain after discharge had higher PP and scored lower on optimism (respectively, $p=0.003$ and $p=0.02$). Background pain showed a stronger effect on post-discharge pain compared to procedural pain.

Conclusions: The results showed that PP, BP and optimism predict the amount of post-discharge pain. This study suggests that patients with higher pain scores in the hospital may need specific attention regarding pain after discharge and they may benefit from optimism inducing interventions.

O3.2.1

Enhancing Scar Treatment Outcomes with Modified Laser Treatment Approaches: A Study on Hypertrophic and Atrophic Burn Scars

Lee J[1], Kim Y[1]
[1]Hangangsoo Plastic Surgery, Seoul, South Korea

Fractional CO2 laser treatments provide safe and effective treatment for scars. The objective of this study is to validate the influence of altering the laser treatment approach on the outcomes of atrophic and hypertrophic burn scars.

This study used the Ultrapulse(Lumenis Ltd., Yokneam, Israel) laser for scar treatment. Hypertrophic scars were treated with high energy and low density in SCAAR Fx mode, while atrophic scars were treated with low energy and high density in Deep Fx mode. Two groups of 40 patients with hypertrophic burns scars were treated, with Group 1 receiving treatment with a continuous wave CO2 laser without depth limitation, followed by SCAAR Fx mode, and Group 2 treated only with SCAAR Fx single mode. Twenty patients with atrophic burn scars were treated in two groups, with Group A undergoing 100% overlapping for increased resurfacing area and receiving 2 passes in Deep Fx mode, and Group B receiving only 1 pass in Deep Fx mode.

Results showed that Group 1 had significant improvement in scar vascularity, pliability, and height compared to Group 2. Group A also showed more improvement in scar appearance compared to Group B. Patient-reported outcomes revealed better results in scar appearance for both Group 1 and Group A compared to single mode treatment.

In conclusion, combination laser treatment in hypertrophic burn scars and increasing the laser resurfacing area in atrophic burn scars resulted in effective scar height reduction and significant clinical improvement. Modifying laser treatment methods has the potential to enhance treatment outcomes for scars.

O3.2.2

COLOURFUL; BiopsyChosOciaL pOst bURn Follow Up of scars in chiLdren: lessons learned, sharing experience and future plans

Meirte J[1,2], Anthonissen M[1,2,3], Moortgat P[1], Demarbaix T[1], Van Daele U[1,2], De Cuyper L[4], Lafaire C[4], Maertens K[1,5]
[1]Oscare, Scar After-care And Research Centre , Antwerp, Belgium, [2]Department of Rehabilitation Sciences & Physiotherapy, Research group MOVANT, University of Antwerp, Antwerp, Belgium, [3]Department of Rehabilitation Sciences, University of Leuven , Leuven, Belgium, [4]ZNA Antwerp, Burn Center, Antwerp, Belgium , Antwerp, Belgium, [5]Vrije Universiteit Brussel, Clinical and Lifespan Psychology, Brussels, Belgium, Brussel, Belgium

Aim: To evaluate the long-term effects on functioning and disability of children with burn injuries, together with the psychosocial effects that could impair their quality of life
Getting a good view on functioning and disability may be a challenge especially when looking at these aspects over the years. Their multidisciplinary care needs change over time and children, although resilient, may face a very long rehabilitation with changing treatment goals and priorities.

Methods: We have been following up on children and their parents post burn. In an outpatient setting children with their parents are invited for a yearly check-up with objective and subjective scar assessment, functional evaluation and self-reported questionnaires to get a full scope of how functioning, quality of life and disability evolves after their burn injuries throughout their childhood. We evaluate changes and try to address changing care needs.

Results:
Over the years our approach has changed and has gone from limited objective evaluation to a more holistic biopsychosocial coverage of outcome measures with inclusion of digital questionnaires and choosing more feasible, valid and reliable scar assessments for our specific population. We keep striving towards a more patient led, tailored and holistic approach with the best possible outcome for every child with unaltered potential and optimal functioning and quality of life.

Discussion:
Scar prevention or treatment and patient follow-up after discharge are essential. The follow up of children post-burn requires teamwork and a biopsychosocial set of outcome measures allows looking at the full picture of health and functioning.

O3.2.3

Platelet Rich Plasma plus Micro-needling in Scar Management – Description of an Innovative Technique and Initial Results from 107 Patients

Kouthoofd G[1], Peters E[2], Jaquet J[2]
[1]Surgery Department, Maasstad Hospital , Rotterdam, Netherlands, [2]Plastic, Reconstructive and Hand Surgery Department, Maasstad Hospital, Rotterdam, Netherlands

Aim: The aim of this study is to evaluate the safety, clinical effects, and patients' experience of a combination treatment course of PRP plus micro-needling.

Methods: In this retrospective cohort study 107 patients with scars, with various aetiology and scar age, were included. PRP has been prepared out of conducted venous blood, which has been injected under high pressure into the dermis of the affected tissue using the U225 meso-injector® as injection and micro-needling device. This treatment has been repeated three times with a four-week interval. Patient records were collected, and clinical investigations and interviews were performed to assess clinical effects, adverse effects, and patient's experience at treatment days and after a four-week follow-up.

Results: 94 patients underwent three treatments, 21.5% of all patients reported softer and more elastic scars, 7.5% reported a better mobility and functionality, 7.5% reported improvement of colour, and 5.6% assessed a healthier skin appearance. Adverse effects reported were mild and temporarily. 23 patients felt stressed before the treatment, 12 patients reported tenderness during the treatment of which two rated it as painful. Two patients reported transient itchiness after the first treatment. No serious adverse effects occurred.

Conclusions: PRP plus micro-needling enhanced the pliability, mobility and colour of different scar types and scar ages. Overall, the treatment was well-tolerated; no serious adverse effects occurred. Therefore, it can be considered as a safe and effective treatment modality in scar management. Further studies should be conducted to testify our initial findings.

O3.2.4

6 months follow up study on efficacy and tolerance of a scar gel containing Aquaphilus dolomiae extract (C+ restore), dimethicone and hyaluronate acid with massage method on post-burning re-epidermized scars

Frasson N[1]
[1]European réhabilitation center: burn,wound and scar, Lamalou Les Bains, France

Objectives:
Epidermal repairing is a complex process to restore the physiological skin barrier function and ensure skin comfort. Hyaluronate acid (HA) is highly recommended for its moisturizing effects as skin regeneration care. In scar care silicones are used to improve skin softness and elasticity especially on post-burn scars. To evaluate the efficacy and tolerance of a scar gel containing the association: C+ restore, dimethicone, HA with an educational program including a massage method developed with an expert for post-burn and -surgical re-epidermized scars, we are conducting a study on adults, teenagers and infants. The objective is to improve superficial skin aspect and quality of life.

Methods:
This open monocentric study involves 60 subjects (2 to 65 yo) and is conducted in good clinical practices spirit after patient's informed consent. 4 visits are conducted: baseline, 3 weeks, 3 and 6 months.
Subjects apply topical gel twice daily on study scars (face or body; post-burn: ≤10% of BSA for minors and 30% for adults). Subjects are trained to massage technique.
Assessments performed: Patient and Observer Scar Assessment Scale 2.0 (POSAS); Scar aspect evolution by Investigator's Global Assessment; Soothing effect; Subject's, and Investigator's product satisfaction by Numeric Rating Scale; Vitropression test; Dermatology Life quality Index questionnaire (DLQI); Burn Specific Health Scale-Brief questionnaire (BSHS-B); erythema by chromametry; illustrative photographs; global tolerance; product's cosmetic acceptability.

Results:
Recruitment is ongoing. 33 subjects included: (16 post-burning, 17 post-surgical) March 2023.

Discussion/Conclusion:
Product quantity use and associated economic aspect will be discussed. Results to be communicated when available.

O3.2.5

Use of acellular dermal matrices to treat both acute and chronic burns: experience in the Burn Unit of the University and Polytechnic Hospital La Fe (Valencia)

Alvedro Ruiz P[1], Díaz Ros N[1], Pérez Plaza A[1], Vidal Peraire A[1], Pérez del Caz M[1]
[1]La Fe University and Polytechnic Hospital, Valencia, Spain

Aim: To present our experience and protocol of use of acellular dermal matrices for treating both acute burns and chronic sequelae in the Burn Unit of the University and Polytechnic Hospital La Fe (Valencia).

Methods: We performed an observational study collecting patient data treated with Integra® bilayer and Matriderm® monolayer dermal matrices during the last ten years in our institution. The following demographic data were obtained from each patient: age, sex, percentage of body surface area burned, depth, mechanism and location of the area treated with dermal matrices, whether it was an acute burn or sequela, and partial or total loss of the dermal matrices.

Results: We explain how the use of acellular dermal matrices has been implemented in our surgical practice, their indications for use, the surgical technique and our post-surgical multidisciplinary management with rehabilitation, physiotherapy and occupational therapy. We can use them in patients in whom we want to reduce the morbidity of the donor site. We have also seen that they reduce the appearance of pathological scars in our patients. They also constitute a very useful tool in the treatment of chronic sequelae.

Conclusions: The use of dermal matrices is a common and widespread practice in surgical management of burn injuries. Protocolizing their use facilitates the complex decision tree in this group of patients. The esthetic and functional results have improved notably with a decrease in the usual complications prior to its use.

O3.2.6

Possible benefits of oral nutritional supplementation or diet in burns and scar management: A scoping review.

Demarbaix T[1], Van Daele U[1,2], Meirte J[1,2], Anthonissen M[1,2,3], De Rijcker E[1], Maertens K[1,4], Moortgat P[1]

[1]Oscare NPO, Antwerp, Belgium, [2]Department of Rehabilitation Sciences & Physiotherapy, Research group MOVANT, Antwerp, belgium, [3]Department of Rehabilitation Sciences, KU Leuven-University of Leuven, Leuven, Belgium, [4]Vrije Universiteit Brussel, Clinical and Lifespan Psychology, Brussels, Belgium

Aim: The evidence regarding a potential role of oral nutritional supplementation in burns and scar aftercare is limited. In this review we aim to provide an overview of the possible beneficial role of supplementations in aftercare settings.

Method: After formulating the research question and accompanying key words, a comprehensive search for relevant publications was performed using PubMed, Web of Science, and Google Scholar. Two authors independently identified and checked each study against the inclusion criteria.

Results: After screening, 14 studies were included in the qualitative synthesis. The studies were divided in 3 categories based on the studied model: human, animal and in-vitro models. Six studies including human subjects showed a link between scar improvement and supplementation of vitamin D and omega-3 fatty-acids or a Solanaceae-free diet and lower omega-6 fatty-acid intake.
One study on animals with atopic dermatitis showed lower pruritus-levels after supplementation with konjac-glucomannan.
Most of the included studies were performed on in-vitro models. The results confirmed the beneficial role of vitamin D. Curcumin- and quercetin-supplementation were linked to decreased fibroblast proliferation. Vitamin C enhances collagen production in healthy as well as keloidal dermal fibroblasts. Chitin stimulated cell-proliferation in human fibroblasts and keratinocytes.

Conclusion: Additional oral supplementation might prove to be beneficial in scar management but many studies were performed on cellular level and most results led to hypotheses, partially derived from relationships between scars and nutritional compounds. Future in depth research should focus on trials in human populations and the role of nutrition on specific scar characteristics.

O3.2.7

Autologous cell spray grafting in the management of partial thickness burn wounds

Hartmann B, Kuepper S, Belfekroun C
[1]ukb Berlin, Berlin, Germany

Aim:
Decreased healing time results in lower inflammation and reduced the risk of hypertrophic scarring. Autologous cell spraying with different preparations of skin cells has been done since 2005 in our burn center. We developed various types of cell preparations and applications over time.

Methods:
Since 2005, more than 340 patients have been treated with autologous cells sprayed on partial-thickness burns. Different dressing modalities were tested as well. 275 of the patients were covered with a polylactide membran.

Results:
In the first prospective study on 19 patients with burns to the face and neck, the TBSB was on average 15.1%. The ABSI was on average 6.7 points. The sprayed areas were with a mean of 2%. Therefore, patients could be re-evaluated after a mean of 10 months with an average Vancouver Scar Scale of 2.4 ± 2.2 points.
In the second retrospective study on 103 patients, 93 were treated after spraying of skin cells prepared in our own skin bank with different dressing protocols. The debridement with a hydro surgery system or Bromelain gel showed not a statistically significant longer healing time.

Conclusion:
Our data show that enzymatic and careful surgical debridement and consecutive application of Cell suspensions using a spray technique results in excellent cosmetic outcomes. It has been established as a standard technique clinically and successfully applied to children and adults with excellent clinical results.

O3.3.1

Five-year review of bacteriological profile of patients treated in clininc of plastic and reconstructive surgery in Bulgarian university hospital

Bogeva-Tsolova I[1], Hristova-Trifonova P[2]
[1]Department of Surgical diseases, Clinic of Plastic and Reconstructive surgery, Medical University Pleven, Bulgaria, Pleven, Bulgaria, [2]Department of Microbiology and Virology, Medical University Pleven, Bulgaria, Pleven, Bulgaria

Introduction
Burn unit patients are a high-risk group for wound infections caused by different microorganisms. Since its foundation in 2003, the Clinic of Plastic and Reconstructive Surgery at University Hospital "Dr. Georgi Stranski", Pleven, Bulgaria had several transformations and this might be the reason why a microbiological analysis was not performed so far. The clinic is working mainly with burn patients with no more than 20% total body surface area burned and also soft tissue defects with different origin.

Aim
To analyze a microbiological profile and susceptibility for a 5-year period of the patients treated at Clinic of Plastic and Reconstructive Surgery. We avoided the COVID-19 pandemic period in order to present data that reflects the normal work dynamic.

Methods
The data for this study was collected from the patient's medical records between January, 2016 to December, 2020 in the Plastic surgery ward.

Results
A total of 601 patients were hospitalized during the study period. Presence of bacterial isolates was detected in 302 (50.25%) of the individuals. In majority of the patients - 194 (64.24%) a single bacterial isolate was detected, whereas in 108 (35.76%) a combination of two or more bacterial isolates was confirmed. A total of 408 bacteria were isolated and the most common species were: S. aureus (n=115), Enterococcus spp. (n=68); E. coli (n=41); Acinetobacter spp. (n=30), K. pneumoniae (n=28) and P. aeruginosa (n=15).

Conclusion
Increased antimicrobial resistance among all types of the isolates has emerged as an important concern during the 5-year period.

O3.3.2

The prevalence of highly resistant micro-organisms in repatriated burn center patients over a 35-year period

Dijkshoorn N[1], Yperen D[1], Van Baar M[2,3], Dokter J[1], Van der Vlies K[1,4]
[1]Burn Center, Maasstad Hospital, Rotterdam, The Netherlands, , , [2]Association of Dutch Burn Centers, Maasstad Hospital, Rotterdam, The Netherlands , , , [3]Erasmus MC, University Medical Center Rotterdam, Department of Public Health, Rotterdam, The Netherlands, , , [4]Trauma Research Unit Department of Surgery, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands, ,

Aim: To study highly resistant micro-organism (HRMO) cultures in repatriated patients on and during their burn center admission over a thirty-five year period in The Netherlands.

Method: All patients repatriated from a hospital abroad to the Maasstad hospital burn center (Rotterdam, The Netherlands), between 1987 and 2022 were included. On and during admission, nose, throat, perineum, and burn wounds of repatriated patients were tested on the presence of three HRMOs: Methicillin-resistant Staphylococcus aureus (MRSA), Acinetobacter, and Pseudomonas. Prevalence rates of total HRMOs as well as the separate types were calculated.

Results: The study included 219 repatriated patients (median total body surface area (%TBSA) burned 8.0% (IQR 4.0-16.0)). Forty-one patients (19%) had one or more HRMOs on or during their burn center admission, including MRSA (n=22; 10%), Acinetobacter (n=20; 9%), and Pseudomonas (n=17; 8%). Thirty patients (14%) were colonized on admission; the other eleven colonized patients (5%) tested positive during admission with median 4.0 days (IQR 2.0-9.0) after admission. No trend was observed in the number of colonized repatriated patients in our burn center between 1987 and 2022.

Conclusion: Almost one out of five of the repatriated patients had one or more HRMOs on or during their burn center admission. This exceeds by far Dutch population levels (1%) and highlights the importance of testing repatriated patients for HRMOs on and during their admission to prevent the spread of HRMOs in the hospital.

O3.3.3

Progression of fungal wound colonization to fungal wound infection after burn injury: a 15-year review

Pruskowski K[1], Cancio L[1]
[1]United States Army Institute Of Surgical Research, JBSA Fort Sam Houston, United States

Aim:
Fungal wound infection (FWI), but not fungal wound colonization (FWC), is an independent predictor of mortality in burn patients. In this study, we examined whether patients with FWC may progress to FWI, and whether progression is associated with increased risk of death.

Methods:
FWC is defined as the presence of fungal elements in non-viable tissue, and FWI as the presence of fungal elements in viable tissue or angioinvasion. Patients admitted between 2004 and 2019, initiated on a systemic antifungal out of concern for FWI but had an initial diagnosis was FWC, were identified. These patients were followed to determine whether FWI developed. This retrospective study was approved by the Institutional Review Board.

Results:
117 patients had FWC. Of these, 79.5% did not develop FWI (Group A), and 20.5% did (Group B). Demographic data and burn size did not differ between the groups. The average time from FWC to FWI was 13.9±18.5 days.
For patients who had positive fungal wound cultures, Aspergillus was the most commonly isolated genus, followed by Candida, Fusarium, and Mucor. Group A had a longer hospital LOS than Group B (90.8±73.7 days vs 61.9±44.3 days; p=0.018), likely due to the higher mortality in Group B (45.2% vs 75%; p=0.009).

Conclusion:
Over 20% of patients who presented with FWC developed FWI, and progression was associated with a significant increase in mortality. Patients with FWC should be frequently reassessed; topical antimicrobials should be changed to include coverage for molds and aggressive surgical intervention should be performed as indicated.

O3.3.4

Acute infective endocarditis in burn patients : a prospective study

El Ourf O[1], Fredj H[1], ALzain H
[1]Traumatology And Burn Center, Tunis, Tunisia

Introduction : In burn patients, infective endocarditis (IE) is under-diagnosed and is often reported postmortem.

The aim of our study was to determine the incidence of IE in burn patients and to describe its clinical, ultrasonographic, bacteriological and evolutionary characteristics.

Methods: A Prospective descriptive study conducted over a period of 7 months (August 2022 - February 2023). All burn patients with sepsis who had a transthoracic (TTE) and/or transesophageal ultrasound (TEE) were included. TTE and/or TEE was performed in all severe burned patients and repeated at each septic episode. Children and non-burned patients were excluded. An IE was considered when there was a septic state with bacteremia and the appearance of vegetation on ultrasound.

Results: 207 patients were hospitalized, 88 of whom presented a sepsis, only 56 patients were included. The diagnosis of IE was retained in four patients, representing an incidence of 2% in all admitted patients and 4.5% in septic patients. All patients were male, age ranged from 28 to 70 years, and average TBSA was 28%. The mean time to IE onset was 9,7 days. Cardiac ultrasound showed vegetation on the native aortic valve in all cases. The causative organisms were Pseudomonas Aeroginosa in two patients (n=2), Staphylococcus in one patient (n=1) and Candida Albicans in one patient (n=1). Only one of our patients survived.

Conclusion: IE is a frequent complication in the septic burn patient with an incidence of 4.5%, and is accompanied by a high mortality (3/4 died).

O3.3.5

State of Burns Care in Zambia-Southern Africa, A Scoping Review

Kasongo N[1,2], Nowbuth A[2], Kaunda K[3], Dhanasekara's S[4], Dissanaike S[4]
[1]Levy Mwanawasa University Teaching Hospital, Lusaka, Zambia, [2]Pan African Organization for Health Education and Research, Saint Louis, United States of America, [3]Kafue General Hospital , Lusaka, Zambia, [4]Texas Tech University Health Sciences Centre, Lubbock, United States of America

Aim: To provide a comprehensive analysis of the state of burns care in Zambia, utilizing a multidisciplinary approach.

Methods: A scoping review was undertaken using the African Journals online, Zambia Medical Journal, Pub-med, the University of Zambia Thesis Repository, article reference lists and specific author searches. Data was extracted on study characteristics, patient demographics, clinical course, burns prevention, surgery, analgesia, physiotherapy and training.

Results: Twenty papers were identified for this review, two excluded (unavailable online). This review includes eighteen Papers, published from 1979-2023. Including six interventional studies, retrospective studies and cross-sectional studies respectively. Sixty-one percent of the studies were conducted in Lusaka at the university Teaching Hospital. The total number of burns patients identified in this study were 8710, with comprehensive data in 4368. The mean age was 7.8 years and male to female ratio was 1. Mean total burnt surface area was < 10% and mortality rate was 24%, 100% for TBSA> 40%. The commonest cause of burns was scalding from hot liquids (70%).
Average burn wound infection rate was 37%, length of hospital stay was 15.7 days. A high burden of contractures needing surgical intervention contributed nearly 80% of burns surgical operations. Prevention studies showed low levels of burns prevention knowledge in communities. Research was non existent on various burns-care components.

Conclusion
This study highlights a high disease burden of burns resulting in complications and limited research. Strides to improve care must focus on increasing research funding, mentorship, reliable record storage, health worker training and community prevention efforts.

O3.3.6

Incidence of different types of infection in the Critical Burn Unit of a tertiary hospital.

Diaz E[1], Vidal Peraire A[1], Artero Castaño A[1], Ferre Colomer M[1], Argente Navarro P[1]
[1]Hospital La Fe, Valencia, España

Aim: To assess the incidence and outcomes of infections in a critical burn unit of a tertiary hospital.

Methods: We conducted a retrospective study on patients admitted to our critical burn unit between 2017 and 2022 with a burn percentage > 40%. We collected data during their stay in the unit: demographic, burn percentage, number and type of infections, day of first positive culture, development of septic shock and mortality. For correlation analysis a multiple regression model using R software was used.

Results: We included a total of 25 patients (20 men/5 women; mean age of 44 years old) in the study, with an average burn percentage of 60% and a mortality rate of 40%. During follow-up, 19 (76%) developed at least one infection, and the incidence of any infection in the 20 patients who survived more than 4 days was 95%. The most frequent infection was cutaneous (79%), followed by pneumonia (53%), bacteremia (47%), and UTI (26%). Mortality was negatively correlated with day of first infection, and it was higher in patients with septic shock (44% vs 9%). No correlation was observed with type of infection. Burn percentage was not significatively correlated with the presence of septic shock or mortality.

Conclusions: Infections are a common complication among patients admitted to critical burn units. We found that cutaneous were the most frequent infection, followed by pneumonia. Mortality was higher in patients with septic shock, which was present in near half of the patients.

O3.3.7

Primary cutaneous Aspergillosis in pediatric burns

Nacea D[1,2], Enescu D[1,2], Tatar R[1,2], Stoica C[2], Tomita M[2]
[1]"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania, [2] "Grigore Alexandrescu" Clinical Emergency Hospital For Children, Bucharest, Romania

Aim: The aim of the study is to synthesize and share the experience of the Burn Unit from the "Grigore Alexandrescu" Clinical Emergency Hospital for Children, Bucharest, Romania, regarding the diagnosis and therapeutic management of primary cutaneous Aspergillosis in the burn patient, an uncommon infection associating increased mortality, morbidity and treatment costs.

Methods: We performed a retrospective study, analyzing the files of all burn patients admitted to our department. The inclusion criteria were the presence of a burn injury concomitantly with confirmed cutaneous Aspergillosis. The investigated period run from June 2020 (the date of first positive wound culture for Aspergillus in our department) till March 2023.

Results: We identified four patients, three boys and a girl, with age between 13 and 17 years. All of them were admitted with deep flame burn ranging from 55% to 90% TBSA . All of them required highly specialized treatment in the ICU and benefited from extensive excision-grafting surgeries, half of them with meshed graft and the other half using the Meek-graft technique. The suspicion of infection was raised by changes in the appearance of the dressings and wounds. After diagnosis all of the patients received systemic and topical antifungal treatment. Three of the patients had a favorable evolution and one of them died.

Conclusions: The early diagnosis of primary cutaneous Aspergillosis, by swab culture monitoring, followed by appropriate treatment, is essential in preventing the transformation of this aggressive opportunistic local fungal infection into sepsis, increasing the patient's chances of surviving.

O3.6.1

The burden of disease of fatal and non-fatal burn injuries for the full spectrum of care in the Netherlands

Van Baar M[1,2], Spronk I[1,2], Verheij R[3], Panneman M[4], Haagsma J[2]
[1]Association Of Dutch Burn Centres, Maasstad Hospital, Rotterdam, Nederland, [2]Department of Public Health, Erasmus MC, University Medical Centre Rotterdam, Rotterdam, Nederland, [3]Nivel, Netherlands Institute for Health Services Research, Utrecht, Nederland, [4]Consumer Safety Institute, Amsterdam, Nederland

Aim
To estimate the burden of disease of burns for the full spectrum of care in the Netherlands, and explore changes over time.

Methods
General practice, emergency department, hospital, and mortality data from 2014-2018 were collected. Years lived with disability (YLD), years of life lost (YLL), and disability-adjusted life-years (DALY) were estimated for each year using a tailored methodology.

Results
Burns resulted in a total of 9278 DALYs (0.54/1000 inhabitants) in the Netherlands in 2018, comprising of 7385 YLDs (80%) and 1892YLLs (20%). Burn patients who visited the general practice contributed most DALYs (64%), followed by deceased patients (20%), patients admitted to hospital (14%) and those treated at the emergency department (2%). The burden of disease was comparable in both sexes (4734 DALYs females; 4544 DALYs males), though the distribution of DALYs by level of care varied. Females contributed more DALYs at the general practice level, and males at all other levels of care. Among children boys 0-4 years had the highest burden of disease (784 DALYs); among adults, females 18-34 years old (1319 DALYs). Between 2014 and 2018 there was a marginal increase of 0.8% in the number of DALYs.

Conclusions
Burns cause a substantial burden of disease, with burns requiring care at the general practice level contributing most DALYs. Information on burden of burns by the full level of care as well as by subgroup is important for the development of tailored burn prevention strategies, and the figures are recommended to use for priority setting and resource allocation.

O3.6.2

The gas pipeline explosion of Ghislenghien in 2004: a successful implementation of the stay and play doctrine in the most serious Belgian outdoor mass burn casualty disaster.

Jennes S[1], Debry F[1], Saidane G[1]
[1]Grand Hôpital De Charleroi, Charleroi, Belgium

Aim
To highlight the role of triage by burn teams (B-Teams) in a forward medical post (FMP) and in an evacuation hospital and the importance of helicopters in a mass casualty incident (MCI).

Methods
We conducted a retrospective study based on the data of all the injured involved and a literature review.

Results
There were 171 victims, including 24 dead (16 on the spot and 8 later at the hospital) and 147 injured, including many burns and psychological shocks. 102 victims were treated at the FMP and the evacuation hospital. There were 69 hospitalizations of more than 72 hours. 65 patients were taken care of in 11 burn centers (BC) (6 Belgian and 5 French). 55 victims were burned over 15% TBSAb, including 20 over 40%. Global and hospital mortality was 14% (24/171) and 10% (7/69) respectively. This is low for an outdoor disaster. In terms of evacuation to BC, there were 41 primary evacuations, 33 evacuations by helicopter, including 23 primary with one death in flight. All the victims were hospitalized in BC in the first 6 hours post-burn.

Conclusions
The medical management of the Ghislenghien disaster is a textbook case over the stay and play doctrine in disaster medicine. We have not been able to show any statistically significant differences in terms of morbidity/mortality between the FMP and the evacuation hospital nor between air and ground evacuations. The B-Teams and the helicopters have shown their central role. The cross-border cooperation between France and Belgium has worked well.

O3.6.3

Patient, or Prisoner? - Acute Burn Injuries in Prisoners: The Birmingham Burns Centre Experience

Rafie A[1], Kankam H[1,2], Sandhu A[1], Chipp E[1]
[1]Department of Burns and Plastic Surgery, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK, Birmingham, United Kingdom, [2]Institute of Inflammation and Ageing, University of Birmingham, Birmingham, United Kingdom

Aim:
Increased risk of violence and self-harm means prisoners are a vulnerable population with complex health needs. They account for a small proportion of patients with burn injuries, however present a unique set of challenges. This study investigates the incidence, pattern and outcomes of burn injuries in prison population.

Methods:
Prisoners referred from 2010-2021 were identified using the International Burn Injury Database(iBID). Patient demographics, burn injury characteristics and outcomes were collected. Patients were then stratified based on mechanism of injury, treatment modality (surgery/conservative), hospital admission (inpatient/outpatient) and compliance with outpatient follow-up, for subgroup analyses.

Results:
Sixty-eight prisoners sustained burns during the study period, with a median age of 28.5 years and TBSA of 3%. The majority were male (98.5%) and required hospital admission (75%). Scalds were the most common injury type (77.9%) and assault the most frequent cause of burns (63.2%). Eighteen patients (26.5%) underwent a surgical procedure and there were two mortalities. Of patients for whom follow-up was planned, 22% attended no appointments, with a further 49% of prisoners missing at least one appointment. Relative to patients managed non-operatively, prisoners undergoing surgery had a longer stay and all attended outpatient follow-up appointments.

Conclusions:
Prisoners represent a unique population with exceptional challenges. Attention should be given to protecting vulnerable patients at risk of assault, education of prison staff around burn prevention and first aid, and ensuring that prisoners are able to access burns follow-up to minimise long term sequelae. Opportunities exist to aid this such as the adoption of telemedicine.

O3.6.4

Development and implementation of an interactive patient-reported outcome dashboard in Dutch burn care

Van Der Vlegel M[1], van Dammen L[1], van den Berg - van Leeuwen M[3], van Baar M[3,4], the National Burn Care, Education & Research group the Netherlands[2,5,6]
[1]Dutch Burns Foundation, Beverwijk, The Netherlands, [2]Burn Centre, Maasstad Hospital, Rotterdam, The Netherlands, [3]Association of Dutch Burn Centres, Maasstad hospital, Rotterdam, The Netherlands, [4]Erasmus MC, University Medical Centre Rotterdam, Department of Public Health, Rotterdam, The Netherlands, [5]Burn Centre, Red Cross Hospital, , The Netherlands , [6]Burn Centre, Martini Hospital, Groningen, The Netherlands

Aim: A value-based healthcare (VBHC) framework will be developed and implemented in the Netherlands to improve person-centered burn care. A key component in this is the development of a dashboard for health care professionals (HCPs) and patients to provide insights into outcomes, expected recovery patterns and to support shared decision making (SDM). Our aim is to develop this person-centered dashboard, to test its usability and to implement the use of the dashboard in clinical practice in Dutch burn care.

Methods: The three Dutch burn centres have a joint patient-reported outcomes registry (Burn centre Outcomes Registry the Netherlands (BORN)). An interactive dashboard was developed visualizing patient-reported outcomes (PROs). HCP and patient focus groups were conducted to identify needs and inform the dashboard's design. Usability was tested in think-aloud interviews with HCPs. After a period of use, HCPs feedback was collected for optimal implementation of the dashboard in daily practice.

Results: The developed dashboard includes patient information (age, sex, time since burns), general open questions on the patients' recovery and PROs on general health, mental health and social outcomes and scar quality. The development was based on Dutch Santeon hospitals' guidelines and included feedback and suggestions of HCPs and patients.

Conclusions: Visualizing PROs in a dashboard is experienced by HCP as a valuable way of reporting outcome information. A person-centered dashboard is a tool that may stimulate patient activation and support SDM. The next step is to make the dashboard accessible for patients at home.

O3.6.5

The urgent need to achieve an optimal strategic stock of human allogeneic skin graft materials in case of a mass disaster in Poland

Łabuś W[1], Strzelec P[1], Ziółkowska K[1], Klama-Baryła A[1], Kamiński A[2]
[1]Dr. Stanisław Sakiel Centre For Burn Treatment In Siemianowice Śląskie, Siemianowice Śląskie, Poland, [2]National Centre for Tissue and Cell Banking, Warsaw, Poland

Aim: A burn is a sudden injury which immediate or long-term consequences may be life-threatening for the patient. A mass disaster event may involve large numbers of severely burned patients. Non-viable allogeneic human skin graft might be considered as the most suitable skin substitutes in the treatment of such patients. At present, Poland does not have a sufficient supply of human allogeneic skin graft materials to meet the needs arising from a sudden and unforeseen mass disaster.

Methods: This study involved an analysis of selected mass disasters. From this an estimate was made from a verified casualty profile of the necessary minimum stock of human allogeneic skin graft materials. An insufficient amount of skin results from an inadequate number of skin donors, which in turn results from the current tissue donation system. Therefore, a proposal has been made for the organizational, legal and systemic changes required to improve the situation in Polish transplantology, with particular emphasis on skin donation.

Results: A tissue collecting transplantation team should be organized. The rights and obligations of the non-physician transplant team member should be extended. To prepare awareness campaigns and educational schemes.

Conclusions: The required, essential stock of human allogeneic skin in the event of a mass disaster has been estimated at 600,000 cm2.

O3.6.6

Enzymatic debridement vs Surgical debridement for burn patients: comparison of real cost per patient at a tertiary centre.

Martin-Playa P[1], Yilmaz-Bescos U[1], Ustarroz-Aguirre I[2], Garcia-Lorenzo B[3], Carames-Estefania J[1]
[1]Cruces University Hospital, Bilbao,, Spain, [2]Cruces University Hospital , Bilbao,, Spain, [3]Kronikgune, Institute for Health Service Research, Barakaldo, Spain

AIM
The use of enzymatic debridement (ED) has proved its clinical effectiveness, and has advantages compared to surgical debridement (SD) on second and third degree burns. But there is scarce literature regarding its real costs. We aim to show the individual cost per patient and of each of the services received during hospital stay.

METHODS
A non-randomised, retrospective, observational study was conducted with 80 patients admitted at our Great Burn Unit divided into two groups (ED and SD). We used a Cost per Patient Information System so that the unit cost of healthcare services and the individualised cost per patient are calculated until hospital discharge. The system includes information related to diagnosis, procedures, sociodemographic information and it is divided into more than 30 categories of resource consumption.

RESULTS
Both groups were statistically comparable. Mean cost per patient treated with SD was 44,841€ compared to 36,190€ with ED. ED group showed shorter length of stay (26,101€ vs 33,919€), decreased need of surgical procedures (0.45 vs 1.28) and shorter use of the operating theatre (202€ vs 3,000€). Mean cost of Nexobrid® per patient was 1,636€. No other significant differences regarding resource consumption were found.

CONCLUSIONS
The cost per major burn patient under ED is lower than SD mainly due to shorter hospital stays and decreased operating theatre time. The main predictors of the cost per patient are the type of aetiology, length of stay and total body surface burned. Further analysis on cost-effectiveness and social cost of burn patients should be carried.

O3.6.7

Triage in burn mass casualty incidents: evaluation of the performance of European Burn Assessment Teams in simulation

Hughes A[1], Almeland S[2], Donat N[3], Leclerc T[3], Corblet D[3]
[1]Interburns, Cambridge, United Kingdom, [2]Haukeland University Hospital, Bergen, Norway, [3]HIA Percy / Percy Military Teaching Hospital, Clamart, France

AIM:
The European response plan to burn mass casualty incidents includes the in-hospital deployment of Burn Assessment Teams to assist in orienting victims. This retrospective study assessed the reliability and reproducibility of their recommendations.

METHODS:
During a pilot training in January 2020 in the UK, five European teams triaged, following the European Burns Association's recommendations for burn disasters, 40 simulated patients, including 16 manikins to be examined clinically under realistic conditions and 24 to be triaged by chart. Evacuation priorities (not needed, 3, 2, 1, futile) were compared between teams and with the reference. The contribution of each triage step to the identified sources of variability was analysed.

RESULTS:
The recommended evacuation priority was highly reproducible between the five teams (Gwet's AC2 agreement coefficient 0.95; 95% CI: 0.92-0.97; p <1e-5). Similarly, their compliance with the reference was high (AC2 = 0.93; 95% CI: 0.92-0.95). Besides the negligible contribution of the main two triage steps, namely categorisation by outcome / resource ratio and determination of evacuation priority, the main source of residual variability was the imperfect accuracy of burned surface area assessed on manikins.

CONCLUSIONS:
This study is the first to validate a burn disaster triage strategy by simulation. In the event of a disaster requiring the activation of the European burn mass casualty response plan, in-hospital triage by specialised Burn Assessment Teams following European recommendations would provide reproducible and reliable assistance in the orientation of victims and the organisation of medical evacuations.

O3.6.8

Preparing for the Care of Burned Casualties following Nuclear Detonation

Cancio L[1], Hickerson W, Jeng J
[1]US Army Institute of Surgical Research, Fort Sam Houston, TX, United States

Aim: Since World War II, we have recognized that a nuclear detonation (NucDet) could generate thousands of burns. How best to care for the survivors remains vexing. In response to a request from the US Agency for International Development (USAID), the authors convened a Burn Working Group (BWG) in February-March 2023 to develop a concept of operations and a burn supply list (BSL) for a possible tactical NucDet during the current war in Ukraine.

Methods: The BWG consisted of 3 burn surgeons with battlefield/mass-casualty experience. We met weekly for 6 weeks in consultation with USAID colleagues. We developed a BSL to provide initial care to 5000 burned survivors, intended for NATO Role I use (self-aid, buddy aid, prehospital medic).

Results: We identified these priorities: assess for other injuries and acute radiation syndrome (ARS); do triage; manage pain; expose patient; cleanse wounds, apply antimicrobial dressings; give oral resuscitation; keep warm, provide education, emotional, and spiritual support; give follow-up instructions; and discharge to ambulatory status if possible. The BSL includes oral analgesics, antiseptic solution (chlorhexidine gluconate), silver nylon dressings, gauze dressings, bacitracin (face, eyes), World Health Organization Oral Rehydration Salts, and reflective aluminum casualty blankets. We developed laminated instruction cards for use by minimally trained personnel.

Conclusion: We proposed an approach to a NucDet, assuming that minimally trained personnel could perform basic tasks in early burn care. Further work is needed to validate this assumption, and to better understand how best to manage combined injury (burns plus ARS) in an austere environment.

O3.7.1

Suprathel after enzymatic debridement with bromelain: our experience

Díaz Ros N, Alvedro P, Vidal A, Thione A, Pérez del Caz M
[1]Hospital Universitari i Politècnic La Fe, Valencia, Spain

Introduction: suprathel is an alloplastic skin substitute which consists of a synthetic microporous absorbable membrane made up of polylactic copolymer, trimethylene carbonate and ecapolacto. It is widely used in split-thickness skin graft (STSG) donor sites, superficial and partial thickness burns, and abrasions for skin re-epithelialization. A particular use of suprathel is covering the bed of deep burns left after an enzymatic debridement with bromelain.

Aim: we review the use of suprathel in deep burns previously debrided with bromelain in our burn unit.
Methods: we reviewed the re-epithelialization rate, the time to complete re-epithelization, the need for surgical intervention after using suprathel and the functional outcome in patients treated with suprathel over the bed of deep burns previously debrided with bromelain in the last five years in our burn unit.

Results: the use of suprathel in our burn unit has reached high rates of spontaneous re-epithelization of the bed of deep burns that have been enzymatically debrided with a low local infection rate. It has also reduced the need for surgical intervention after enzymatic debridement and, therefore, decreased hospital stay and further complications, leading to optimal functional and aesthetic short-term and long-term results for these patients.

Conclusion: suprathel is a suitable skin substitute for deep burn beds after enzymatic debridement with bromelain, achieving optimal functional and aesthetic results.

O3.7.2

Use of human amniotic membrane as a temporary biological dressing in toxic epidermal necrolysis: literature review and case report of our center

Alvedro Ruiz P[1], Díaz Ros N[1], Pérez Plaza A[1], Corella Estévez P[1], Pérez del Caz M[1]
[1]La Fe University and Polytechnic Hospital, Valencia, Spain

Aim: To determine whether amniotic membrane application is a suitable option for treating severe skin lesions in patients with TEN.

Method: A review of the literature was carried out using the PubMed and ScienceDirect databases combining the terms “amniotic membrane”, Lyell’s Syndrome” and “Toxic Epidermal Necrolysis”. After eliminating duplicates, a total of 22 articles were obtained, of which 8 were selected for this study. In addition, a clinical case report of our institution is included.

Results: Human amniotic epithelial stem-cells may promote skin wound healing by accelerating keratinocyte proliferation and migration via the ERK, JNK and AKT signal pathways. In accordance with these experimental results, we observed an excellent evolution of the wounds of a patient in which amniotic membrane was applied, reaching complete re-epithelialization after 3 weeks of hospitalization in the Burn Unit of our center.

Conclusions: The use of amniotic membrane as a temporary biological dressing may promote re-epithelialization of skin lesions in patients with TEN or burns due to its proliferation and angiogenic factors. In addition, it may reduce wound exudate and pruritus. Nevertheless, more experience and scientific evidence is needed.

O3.7.3

Cold burns in the United Kingdom: A cohort study of patients presenting to a regional burn unit

Baldwin A[1], Bhojwani D[1], Murray A[1]
[1]Buckinghamshire Healthcare NHS Trust, Aylesbury, United Kingdom

Aim
To assess the aetiology, management and outcomes of cold burns presenting to a regional burn unit.

Methods
Retrospective cohort study of consecutive patients over a two-year period (2021-22). Details regarding injury, management, and outcome were extracted. Statistical analysis was performed using Kruskal-Wallis test, and Dwass-Steel-Critchlow-Fligner pairwise comparison, for non-parametric continuous variables and chi-squared, or Fisher's exact test, for categorical variables, with Bonferroni correction for pair-wise comparison.

Results
Thirty-five patients (M:F 20:15; median age 23 [IQR 16]) were identified. The most common aetiologies were aerosol (n=15, 42.9%), recreational nitrous oxide use (n=6, 17.1%) and environmental (n=5, 14.3%). Most cases were accidental (n=21, 60%). Four (11.4%) were sustained during a social media ‘challenge’. Ten (28.6%) were self-harm, of whom three (33.3%) were psychiatric ward inpatients. All deliberate injuries were caused by aerosol. Deliberate ‘challenge’ injury patients were younger than those with self-harm (p=0.012) and accidental injuries (p=0.005). A greater proportion of self-harm injuries were in female patients compared to accidental injuries (p=0.004). Median TBSA was 0.4% (IQR 0.3). Full-thickness: 8 (22.9%), deep-dermal: 12 (34.3%), superficial partial-thickness: 15 (42.9%). Limbs were most frequently affected (n=31, 88.6%). Aetiology and whether accidental or deliberate did not affect TBSA (p=0.62, p=0.94), healing time (p=0.46, p=0.67), depth (p=0.75, p=0.58) or location of burn (p=0.12, p=0.41). Four (11.4%) patients required grafting. The median time to healing was 21 days (IQR 22.75).

Conclusions
A disproportionate number of cold burns are deliberately self-inflicted, either as self-harm or due to a concerning recent trend of social media ‘challenges’ using aerosols.

O3.7.4

Safety, efficacy and clinical outcomes of cadaveric cryopreserved allograft skin

Dunkelman MD FACS A[1]
[1]Orange County Burn Center, 1001 North Tustin Ave, United States

Aim: To discuss the use, safety and advantages of cryopreserved cadaveric skin with viable cells.

Methods: Cadaveric allograft is the gold standard for closure of large burns, offering many advantages over other available biologic dressings. The optimal cadaveric allograft is fresh cadaveric skin but is limited by availability and shelf life. Cell viability and structural integrity are essential components for wound bed optimization. Current methods of allograft preservation include cryopreserved allograft and Glycerol preserved allograft. Cryopreservation utilizes 11% glycerol but maintains cell viability, while glycerol preserved skin utilizes 85% glycerol and results in nonviable cells. There is controversy regarding cell viability and performance as a biologic dressing. In this presentation we will review the safety and patient outcomes with the use of cryopreserved skin. We will review recovery and processing of cryopreserved skin and present literature and patient case studies using cadaveric viable cell allograft on full thickness and partial thickness burns.

Results: Allograft with live cells promotes angiogenesis and dermal regeneration. These viable allografts may decrease mortality risk as well as length of hospital stay. Cryopreserved skin is a safe option, effective in both partial and full thickness burns, resulting in improved clinical outcomes.

Conclusions: Cryopreserved cadaveric allograft with viable cells is a safe available option in the treatment of large burns, which may result in better clinical outcomes.

O3.7.5

The study of using medical honey dressing compared to stapler for skin graft fixation in burn wounds

Rimaz S[1], Mobayen M[2], Rimaz S[3], Feizkhah A[4]
[1]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran, [2]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran, [3]Anesthesiology Research Center,Department of Anesthesioly,Guilan University of Medical Sciences, Rasht, Iran, [4]Burn and Regenerative Medicine Research Center,Guilan University Of Medical Sciences, Rasht, Iran

Aim: A critical element of skin grafts is the adherence of the graft to the wound bed.This study aimed to determine the effect of using medical honey compared to staplers in attaching skin grafts to burn wounds.

Methods: In this clinical trial study,80 patients with deep 2nd &3rd-degree burns with TBSA< 40% underwent skin graft surgery. Patients were randomly divided into two groups of 40 people: using honey or stapler for graft fixation. All wounds were opened on the fifth day of grafting.All patients in two groups were evaluated for graft rejection, number of hospitalization days, transplanted skin displacement, graft contraction, Pain(VAS Score), edema, hematoma, itching (5D Score), and infection rate.

Results: A total of 80 patients were enrolled with mean age of 39.29 ± 15.42 years and there were 34 men (42.5%) and 46 women (57.5%)patients. No significant difference were observed according to age,TBSA,mecanism of burn and sex. The mean hospital stay was shorter (P = 0.034) and infection rate, hematoma, edema, pain and itching severity (P = 0.000), which were less in the honey group. The graft contraction rate was lower in the stapler group (P = 0.031).Graft rejection was not observed in any group.

Conclusion: The results showed that the natural honey is a very effective agent for split thickness skin graft fixations in burn patients and has reduced negative factors of skin graft such as duration of hospital stay days and adverse effects such as pain and itching severity, edema, hematoma, and infection rate.

O3.7.6

Biological selection and qualification strategy of an allogeneic bank of human dermal fibroblasts used for the preparation of epidermal substitutes

Auxenfans C[1], Banzet S[2], Rovere M[1], Trouillas M[2]
[1]Hospices Civils De Lyon, Lyon, France, [2]IRBA, Clamart, France

Irradiated human allogeneic dermal fibroblasts are used to promote the culture of keratinocytes and preparation of epidermal substitutes for the treatment of severe burns. We present the biological selection and qualification strategy of this allogeneic cell bank used for hospital exemption product. Fibroblasts are collected from foreskin of a healthy, selected child under 10 years old. They are isolated and cultured in good manufacturing practice (GMP) production area and managed in a cell bank system. Fibroblasts extracted from the starting material are cultured until passage 6 and frozen in a master cell bank (MCB). A working cell bank is prepared in passage 9 and irradiated cells are used in passage 11.

The biological selection and qualification were carried out according to European Pharmacopoeia guidelines and risk-based approach. First, irradiated dermal fibroblasts from three donors were compared on the functional capacity to support keratinocytes proliferation, clonogenicity and the ability to form an epidermal sheet. Fibroblasts from one donor gave results comparable to the feeder layer currently used. Then, we confirmed fibroblast phenotype from human origin. Thirdly, to ensure the safety, the absence of transmissible infectious agents with contaminations that can come from the donor, from products used during the culture or from the production environment has been verified. Finally, we ensured that cells possess a normal karyotype.

This qualified allogeneic bank will be used for the production of cultured autologous or allogenic epidermis in Lyon (authorized) and of human plasma based epidermal substitute in Percy (authorization request in preparation).

O3.7.7

Effectiveness of Tranexamic Acid in Burn Patients Undergoing Surgery: a systematic review.

Slob J[1], Gigengack R[2], van Baar M[1,3], Koopman S[4], van der Vlies C[1,5]
[1]Burn Center Rotterdam, Rotterdam, the Netherlands, [2]Department of Anesthesioloy, Amsterdam UMC, VU Medical Center, Amsterdam , the Netherlands , [3]Association of Dutch Burn Centers, Rotterdam , the Netherlands , [4]Department of Anesthesiology, Maasstad Hospital, Rotterdam , the Netherlands , [5]Department of Surgery, Maasstad Hospital, Rotterdam, the Netherlands

Aim: The aim of this systematic review is to investigate the effectiveness of tranexamic acid to reduce perioperative blood loss compared to standard of care, in burn patients undergoing burn excisional surgery.

Methods: A systematic review of the literature will be conducted according to the preferred items for systematic reviews and meta-analysis guidelines. The study is registered in PROSPERO database (CRD42023396183), before the search is conducted. The Cochrane Risk of Bias version 2 tool is used for the randomized controlled trials included. The ROBINS-I risk of bias tool to assess non-randomized studies of interventions is used for the cohort studies included. The Joanne Briggs Institute Critical Appraisal Checklist is used for the case reports included.

Results: Seven articles were included in this systematic review: two randomized controlled trials, one prospective cohort study, two retrospective cohort studies and two case reports. Data extraction on 305 patients in seven studies has been conducted by two independent reviewers. Three predefined outcomes were extracted from the original articles: outcome 1 blood loss, outcome 2 transfused packed Red Blood Cells and outcome 3 Hemoglobin levels postoperatively. Data on risk of bias and quality of studies included will be presented at the conference.

Conclusions: Articles investigating the effectiveness of tranexamic acid to reduce perioperative blood loss in burn patients are available. However, a systematic review of literature is absent. This study presents an overview of the evidence and provides directions for future research.

O3.7.8

Attempted suicide by self-immolation in Tunisia: 11 years after the revolution

Mokline A[1], Fraj H[1], Rjeibi i[2], Gasri B[1], Messadi A[1]
[1]Trauma and Burn Center, Tunis, Tunisia, [2]National Institute of Nutrition, Tunis, Tunisia

Aim: to evaluate epidemiological, clinical and evolutionary characteristics of burns by immolation in Tunisia.

Methods: A retrospective study was conducted in intensive burn care department in Tunis, over a period of 11 years after the revolution.

Results : During study period, 755 patients were included. The mean age was 33.38 years with a sex ratio of 4.5 (618 M/ 137F). Half of the patients were single, 2/3 (74.3%) had an unfavorable or medium socioeconomic level, 35.8% were unemployed. The educational level was secondary in 46% of cases and primary in 33.9%. Secondary transfer was noted in 53.6% of cases. Patients came from all regions of Tunisia with a predominance of those from the Tunis area (37.8%). One third of our patients had a psychiatric history, with the notion of a previous suicide attempt in 5.1% of cases. Alcoholism and/or drug addiction were reported in 17.7% of cases. The act of self-immolation was performed in a public place in 59.2% of cases. TBSA was 41.48% and TBSA was 7.35. Burns were deep in 66.2% of cases. Facial involvement was noted in 90% of patients. The average length of stay was 17.64 days. 2/3 of patients (72.1%) required intubation and mechanical ventilation. The mortality rate was 57.2%.

Conclusion : In Tunisia, attempted suicide by immolation after the revolution represents a serious public health problem, with an average of 75 cases/year Specific and urgent preventive measures, targeting the main risk factors, in particular precariousness, unemployment, adjustment disorders and mental illnesses, should be implemented.

O3.8.1

Specificities of burns in children according to age group : Our national center experience

Karray A[1], Fredj H[1], Gasri B[1], Mokline A[1], Messadi A[1]
[1]Intensive care burn department, Traumatology and burn center, Tunisia, Ariana, Tunisia

Introduction
There are 4 phases of childhood (newborn, early childhood, older children and adolescent). Burn injuries may touch these different age groups.
The aim of the study was to determine the epidemiological and clinical carecteristics of different age groupe admitted to our burn department.

Methods
Retrospective study, including burned patients aged less than 18 years-old admitted between Januray 2018 and June 2022. Four groups were defined according to age in year : G1 : newborn group [0-2], G2 : early childhood goup [2-5], G3 : old childhood group [5-12] and G4 : adolescent group [12-18].

Results
A total of 300 children patients admitted for burns. Majority of cases were in old childhood group (33%). Burns in newborn group were the lowest (8%). Male gender predominance (61%) was more present among old childhood and adolescent groups. Domestic accidents were the unique circumstance in newborn group. Its frequency decreases gradually with age (47% in adolscent group), as opposed to the leisure accidents which climb with age (G1 :0, G2 : 2.4 %, G3 : 11%, G4 : 14 %). Work accidents and suicide attempts were present only in adolescent groupe (7.6% and 23% respectively). Total burn surface area was on average 14%, 24 %, 31 % and 32 % respectively in G1, G2, G3 and G4.

Conclusion :
Education which still the main way to prevent burns must take into account the particularities of each age group of childhood.

O3.8.2

Telemedicine used to advance burn care in Ukraine: case series of using dermal equivalents in one institution

Posunko A[1], Dihtyar V[1], Friedstat J[2], Vlasov A[1], Fuzaylov G[2]
[1]Regional Medical Centre Of Family Health, Dnipro, Ukraine, [2]Shriners Children's Boston, Boston, USA

Introduction

Telemedicine and collaboration with US doctors have the potential to link experts in specialized fields to come up with better result and advance burn care in Ukraine, especially during the war.

Methods

There were seven children who had surgeries in the Regional Children Hospital, Dnipro, Ukraine: the age range was from 3 months to 16 years. Five patients presented with post-burn contractures; one child had a giant naevus, and another one had aplasia cutis of the scalp. In the burn scar cases the scar tissue causing contracture was dissected and the limb repositioned in the correct physiological alignment prior to graft. The Giant naevus was excised initially, providing an optimal histologically clean margin. After these initials preparations a dermal equivalent was implanted on the wound surface and sutured in place. In case with aplasia cutis, it was direct implantation dermal equivalent on temporal fascia and fix by the suture. As the dermal equivalent engrafted, a split graft (0.2-0.3 mm thick) was transplanted.

Results

In all cases, engraftment of the dermal equivalent was successful. There was one case with local inflammation, which was successfully resolved by prescribing antibiotics and draining the focus.

Conclusions

The results allow us to conclude that the use of dermal equivalents and telemedicine with US institution allows in many cases to avoid complex and resource-intensive operations. However, the method of application and criteria for selecting patients require improvement.

O3.8.3

Protocolized strategy for the management of burn wounds in the pediatric patient: experience in a spanish tertiary hospital

Yilmaz U[1], Morteruel Arizcuren E, Rodriguez Ruiz P, Cabrera Escondrillas N, Martin Playa P
[1]Cruces University Hospital, Bilbao, Spain

AIM
Burn injuries in the pediatric patient are a major source of morbidity and mortality, with substantial physiological and psychological impact that requires specialized treatment. This review aims to identify key points in the management of the pediatric burn patient and to describe our protocol.

METHODS
The protocol established in our hospital is described, including initial and subsequent injury assessments, type of hospital admission, adequate pain control and sedation, indication for enzymatic debridement and type and frequency of dressing changes. A retrospective review was conducted including pediatric burn patients admitted to Cruces University Hospital (2021-2023).

RESULTS
Approximately 90 patients are evaluated per year, 8-10 of which require admission. The protocol we present involves clinical care from admission to the Emergency Department until hospital discharge. The management requires a multidisciplinary approach (Plastic Surgery, Pediatrics/Pediatric ICU, Nursery team) in order to guarantee patient comfort, highlighting the role of appropriate sedoanalgesia during both evaluation and treatment as well as patient and parents comfort. During admission, the topical agents and dressings for local burn wound care are tailored according to whether enzymatic debridement (NexoBrid®) or surgical treatment is required or not.

CONCLUSIONS
The management of burns in the pediatric patient is similar to adults but has certain peculiarities that must be considered. The importance of appropriate sedoanalgesia and atraumatic local burn care take an essential role in hindering the physical and psychological stress derived from burn injury. Therefore, it is crucial to establish a multidisciplinary protocol to collaboratively approach burn care in these patients.

O3.8.4

Improving the transition pathway for paediatric-to-adult burns care at Chelsea and Westminster Hospital (CWH)

Curry G[1], Pandey A[2], Caine P[2], Jones I[2]
[1]Imperial College London, London, United Kingdom, [2]Chelsea and Westminster Hospital NHS Foundation Trust, London, United Kingdom

Aim
We aimed to assess and improve the current transition pathway for paediatric-to-adult burns care at CWH.

Methods
Using Cerner, we identified paediatric burns outpatients aged 12-16 years from 01.12.21-28.02.23 who were likely to transition to adult services. We interviewed key stakeholders including burn therapies, psychology, and paediatrics, burns charities and the carers of the identified patients. We researched national transition guidelines and took guidance from successful transition programmes in other trusts.

Results
121 paediatric outpatients were identified, with 6 likely to transition to adult care. Interviews with key stakeholders identified concerns around when to broach the topic of transition, the extent to involve parents and the patient experience on the adult ward. 4 interviews with carers were conducted. Their concerns included medical team consistency and a lack of knowledge about the impending transition. All 4 agreed a formal transition meeting, online resources and an introductory departmental tour would ease concerns. We designed intranet guidelines for paediatric staff at CWH and an information leaflet for children undergoing transition and their carers, ensuring equality, diversity, and inclusivity. Advice from national transition guidelines were included in these documents. 100% (6/6) of staff surveyed reported that our guideline improved their knowledge of the transition process.

Conclusion
Transitioning patients should have a formal transition meeting and departmental tour. Online resources such as guidelines and information leaflets can help build confidence in staff and transitioning patients. When designing these documents it is important to gather information from key stakeholders.

O3.8.5

Synthetic epidermal substitute in the treatment of partial thickness burns in paediatric patients: a 3-year experience of a tertiary centre

Fernandes S[1], Carmo L[1], Teixeira I[1], Campos M[1], Garcia M[1]
[1]Department of Pediatric Surgery, Centro Hospitalar Universitário De São João, Porto, Portugal

Aim: Suprathel® [polylactide membrane (PLM)] is a biosynthetic dressing that mimics the properties of the human epithelium. Reports on its use in paediatric patients show promising results. Herein we describe the experience of our centre on the use of PLM in paediatric patients.

Methods: All paediatric burn patients admitted to the Paediatric Surgery Department between November 2019 and November 2022 and submitted to PLM application were selected. A historical cohort of paediatric burn patients was used for result comparison. Clinical and demographic data were collected retrospectively.

Results: One hundred twenty-two patients with a median age of 1.8 years were included. The median total body surface area was 6% (1–25%), and burns were mainly mixed-partial thickness. PLM was applied at a median of 4 days post-burn (IQR 2–6), usually under sedation (70/122). After PLM application, the median healing time (HT) was 10 days (IQR 8–14). No correlation was found between HT and the timing of PLM application. Six cases of infection were seen, and 2 cases showed a failure of integration needing a skin graft. By comparison with the historical cohort with similar demographic and clinical characteristics, after selecting partial thickness burns (n=75 historical cohort vs n=122 PLM-treated), the grafting rate was significantly lower in PLM-treated patients (1,6% vs 17,3%; $p<0.001$).

Conclusions: PLM is a promising treatment for partial-thickness burns, even when applied later during treatment. Short HT and the lower rate of autologous skin graft, potentially sparing donor sites, are its main advantages.

O3.8.6

The efficacy of therapeutic interventions on pediatric burn patients' height, weight, body composition, and muscle strength

Cuijpers M[1,2,3], Baartmans M[4], Joosten K[5], van Zuijlen P[1,2], Pijpe A[1,2,3]
[1]Burn center, Red Cross Hospital, Beverwijk, The Netherlands, [2]Association of Dutch Burn Centers (ADBC), Beverwijk, The Netherlands, [3]Department of plastic, reconstructive and hand surgery, Amsterdam UMC, Amsterdam, The Netherlands, [4]Department of pediatrics, Maasstad Hospital, Rotterdam, The Netherlands, [5]Department of pediatric and neonatal intensive care, Erasmus MC - Sophia Children's Hospital, Rotterdam, The Netherlands

Aim: To evaluate the efficacy of therapeutic interventions on pediatric burn patients' height, weight, body composition, and muscle strength.

Methods: A systematic literature search was conducted in PubMed, EMBASE, and Web of Science up to March 2021. We considered interventional studies that reported metrics on the height, weight, body composition, or muscle strength of pediatric burn patients in a peer-reviewed journal. A meta-analysis was performed if two or more trials of clinical homogeneity reported on an outcome measure at the same time point post-burn.

Results: Twenty-four interventional studies were identified, including twenty randomized controlled trials and four non-randomized trials. Most studies were conducted by a single institution. The average burn size was 44.3% (±9.5) of the total body surface area. Three categories of therapeutic interventions could be distinguished: rehabilitative exercise programs, pharmacologic agents, and nutrition support.

Conclusions: Although very diverse in their mechanism of action and results, each of the interventions seemed to have a positive effect on pediatric burn patients' height, weight, body composition, or muscle strength. In future research, it is important to evaluate the heterogeneity of treatment effects and whether participation in a therapeutic intervention allowed pediatric burn patients to reach the physical and functional status of healthy control subjects.

O3.8.7

Case series of pediatric burn in national refferal center : about 300 cases

Karray A[1], Fredj H[1], Gasri B[1], Mokline A[1], Messadi A[1]
[1]Intensive care burn department, Traumatology and burn center, Tunisia, Ariana, Tunisia

Introduction
Burn injuries are common emergencies in pediatric population. Recognition of circumstances contributing to the occurrence of burn accident is needed to prevent.
Our objective was to study the epidemiological and clinical caracteristics of children admitted to our burn department.

Methods
Retrospective observational study, including patients aged less than 18 years-old admitter for burn between Januray 2018 and June 2022 at Burn care department of Burn and Trauma Center in Tunis.

Results
Of a total 2124 patients admitted for burns, 300 were children (14%). The mean age was 8 years old [6 months – 17 years old]. There is a male gender predominance (61%). The majority of our patients were victims of thermal burns (90%), mostly caused by flame (44%). Low socioeconomic level was found in 29% of cases. Domestic accidents were the most frequent circumstance of burns (78 %), occurring mostly in the kitchen (37%). Total burn surface area was on average 21%. United burn standard was on average 27,6. The most affected areas were the trunk and limbs. The mean length of hospital stay was 14 days. Sixty-eight children (23%) required mechanical ventilation. The mortality rate was 16 %

Conclusion
Burns in children are frequent, occur in the home in most cases, especially in the kitchen and are accompanied by a significant mortality. Prevention must be based on educating parents and children about dangers in the home.

O3.8.8

Operative treatment of pediatric burns – tertiary center experience in a cohort of 139 children

Kravljanac D[1,2], Simic R[1,2], Sujica M[1]
[1]Institut For Mother And Child Healtcare Of Sebia, Clinic For Pediatric Surgery, Belgrade, Serbia,
[2]Medical faculty University of Belgrade, Belgrade, Serbia

Aim: The evaluation of applied surgical procedures in burn operative treatment in our cohort during the last ten years.

Methods: The retrospective study included pediatric burns patients treated, by different surgical procedures under general anesthesia. Children were reviewed for age, sex, manner of injury, total body surface area (TBSA) of burn, degree of burn, type of surgical procedure, and length of healing.

Results: The study included 139 children (71 boys, 69 girls), operated between 2012-2022. The mean age was 4.69 years (range 1 month-17 year). Most of them were injured by hot liquids (62.59%), followed by flame burns (15.62%), contact burns 20 and electrical injuries 11 children. The mean TBSA of the burn was 9% (range 1% to 50%). All patients had deep dermal or full-thickness burns. The performed procedures were: necrectomy and skin grafting in 94.24% of the cases, necrectomy with primary closure in four children, necrectomy with local flaps for closure of the burn area in two patients, and amputations of the hands and reconstruction of the wounds in two cases with severe electrical injury. The average time of the burn wound healing after the operation was 15.32 (range 7-59) days.

Conclusions: Operative treatment of pediatric burns is usually reserved for severe cases where the burn wound involves deeper layers of the skin. Early necrectomy and skin grafting are the gold standards for most children. The specific surgical approach will depend on the extent and severity of the burn injury including amputations in the most severe patients.

O4.1.1

Enzymatic debridement with bromelain for facial burns: our experience

Díaz Ros N, Alvedro P, Vidal A, López E, Pérez del Caz M
[1]Hospital Universitari i Politècnic La Fe, Valencia, Spain

Introduction: facial burns account for up to half of the burns seen in a burn unit. Although most are superficial, the deepest ones entail significant impact on the quality of life of these patients because the face is involved not only in self-perception and communication, but also in sensitive functions such as hearing, taste and breathing, all of which can be affected by a facial burn. Therefore, optimal management of facial burns is vital to achieving these patients' best aesthetic and functional results.

Aim: we review the results of enzymatic debridement with bromelain in patients with facial burns admitted to our unit.

Methods: we conducted a descriptive and retrospective study, reviewing all the patients with facial burns admitted to our burn unit within the last six years. We described the type of burn and the total burnt surface, the need for subsequent surgical intervention and the aesthetic results.

Results: out of the 319 patients with facial burns admitted in our unit from 2017 to 2023, 82,4% presented second and/or third-degree facial burns. Those deepest were enzymatically debrided with bromelain (n=16) and less than half of those eventually needed surgical intervention. In order to evaluate the aesthetic results, we conducted a satisfaction survey and carried out a photographic assessment.

Conclusion: implementing the use of bromelain has resulted in an early and selective debridement, an actual rate of spontaneous reepithelization and a reduction of the need for surgical intervention, which leads to optimal functional and aesthetic results for patients with facial burns.

O4.1.2

Management and outcomes of SJS/TEN in a regional burn's unit in Northern Ireland

De Carvalho L[1], Rashid A, Black C, Hodgins N, Fogarty B, Dustagheer S, Beswick W
[1]The South Eastern HSC Trust, Belfast, United Kingdom

Aim: To review the local evidence of the management and outcomes of patients with Stevens-Johnson syndrome (SJS) and Toxic epidermal necrolysis (TEN) in a regional burn's unit.

Methods: Local records of the regional burn's unit in Belfast were reviewed retrospectively for patients who had a diagnosis of Stevens-Johnson syndrome and toxic epidermal necrolysis during 2022-2023. Medical and operational notes were evaluated for age, total body surface area affected, type of dressing applied and healing outcomes as well as morbidity.

Results: Recent local evidence suggests early debridement of loose epidermis, deroofing blisters and application of Biobrane®.

Conclusions: SJS and TEN are rare and severe skin disorders, UK guidelines suggest blisters are decompressed and epidermis is left in situ. Local evidence has found success with a more aggressive approach of debridement and application of biosynthetic skin dressings.

O4.1.3

The efficiency of enzymatic debridement combined with negative pressure wound therapy for deep burns treatment – a clinical study

Tamas C[1], Moraru D[1], Ibanescu C[1], Jemnoschi Hreniuc I[2], Tecuceanu A[2]
[1]Umf Gr. T. Popa Iasi Plastic Surgery Department, Iași, Romania, [2]Umf Gr. T. Popa Iasi Anatomy Department, Iași, Romania

Aim
To evaluate the efficiency of the enzymatic debridement using bromelain powder combined with negative pressure wound therapy in the treatment of second and third degree burns.

Method
Our retrospective study analyzes 24 patients (14 men), hospitalized in the Burns Unit from "Sf. Spiridon" Emergency Hospital Iasi, during a 5-year period (2019-2023).
The patients included in our study suffered thermal (20 cases) or electric (4 cases) injuries, with a total burn surface area ranging from 8 to 45% TBSA. We applied enzymatic debridement therapy within the first 3-5 days after the injury, and we evaluated the burn wound depth before and after the debridement using a Laser Doppler Perfusion Imaging system.
We combined enzymatic debridement with negative pressure wound therapy (NPWT) for wounds located on the limbs and trunk (12 cases). For the rest of the patients (12 cases), we associated the enzymatic debridement with local applications of ointments based on low molecular weight hyaluronic acid (LMW-HA) in IIA burns (5 cases). For IIB and III burns we used hyaluronic acid silver powder spray or antibacterial dressings based on dialkylcarbamoyl chloride (7 cases), aiming to remove the bacterial biofilm from the wound surface.

Results
The survival rate was 83.33% (20 patients). The wound healing daily rate for the NPWT group was higher (3.25%-2.86% wound surface) compared with the second group (2.64%-1.98%).

Conclusions
The combined effect of enzymatic debridement of the burned tissue and NPWT can reduce wound healing time and the hospitalization period.

O4.1.5

Nexobrid off-label use in the elderly in vall d'hebron burns unit

Lugilde Guerbek A, Serracanta Domenech J, Barret Nerin J
[1]Vall D'Hebron Hospital, Barcelona, Spain

AIM: We aimed to evaluate the off-label use of Nexobrid enzymatic debridement in the elderly population.

METHODS: In our case-report study, we included 42 patients aged 66-94 years with 2nd-degree deep and 3rd-degree burns treated with Nexobrid (NXB) in our unit. We defined age, sex, etiology, total burned surface (TBS), NXB-treated surface, time to Nexobrid use, hospital stay, mortality, infection, time to healing, need for surgery, escharotomy, and transfusion requirements as our primary outcomes.

RESULTS: Most patients were male, and the most common cause for burns were flames. Their mean age was 74.5. The average TBS was 17.74%, with an average NXB-treated surface of 7.49% and a time-to-NXB average of 1.2 days. The average hospital stay was 28.8 days. Mortality was found to be 23.8%. Infection rates were 26.2%, while the need for surgery, escharotomy, and transfusions were 76.2%, 0%, and 23.8%, respectively. Time to healing was at an average of 70.35 days.

CONCLUSIONS: Findings suggest that Nexobrid use may result in minimal blood transfusion and decrease in infection rates in the elderly population, which could lead to a decrease in complications and hospital stay. Although the study found a higher mortality rate, this was likely due to the fragility and burn severity, rather than the use of Nexobrid. Finally, the study's findings contribute to the limited literature on Nexobrid use in elderly patients, providing initial insights into its effectiveness, although further research is needed to confirm its safety and efficacy.

O4.1.6

Facial burns – refined clinical pathway of conservative treatment

Stritar A[1], Emeršič L[1], Lovšin K[1]
[1]UMC Ljubljana, Ljubljana, Slovenia

Aim

Full-thickness facial burns present a serious injury of a head with the possibility of thermal trauma damage to the nasal pyramid, eyes and ears. Deep burns are treated surgically as a delayed necrectomy (prof. Janžeković). At the same time, interventions such as tracheostomy, tarsorrhaphy and immediate excision of exposed cartilage are indicated.

Methods

Superficial and mid-dermal burns are treated mostly conservatively. According to the protocol we apply gauzes and change wet dressings through the first 3 days after the burn injury. Later, we switch to treatment with ointments or special dressings. In our practice, we also have a lot of good results with treatment with Silver Sulfadiazine (Dermazin) cream, antibiotic ointments, medical honey, and later with hydrocolloid ointments.

Results

In recent years, we have been using hydrogel (Microdacyn, Prontosan X), as an application once a day or every two days after toileting with saline solution. The application is sterile while hydrogel is completely harmless to mucous membranes and eyes. The pharmacodynamic action of the gel is beneficial to the facial region. Occasionally, we combine the application with another special dressing over. In our experience, the best results are achieved by using nanocellulose preparations (Epiprotect, epicitehydro, FibDex). Both applications clinically prove synergy.

Conclusions

We have reached great aesthetic and functional outcomes by using proper treatment plans according to the local burn wound status. Minimal consequences have been observed in either superficial or mid-dermal burns in children and adults. Regeneration process does not result with scarring and residuals.

O4.1.7

Epicite (nanocellulose biotechnologically manufacture) as a first-line dressing, followed by Epifast (Cryopreserved Cultured Keratinocytes Sheet able to release grow factors) in second-degree burns.

Rodriguez-ferreyra P[1], Narvaez T[1], Gayosso-ceron O[1]
[1]Instituto De Salud Del Estado De Mexico, Toluca, Mexico

Second-degree burns mostly coexist superficial and deep areas, and even with third-degree areas, however, the treatment for each area will be different, we must also consider that the delay in the coverage of the injury can cause desiccation and deepening of the lesion.

Aim: evaluation of the use of Epicite as a first-line dressing in the first 24 hours post-burn and Epifast (nanocellulose biotechnologically manufacture) for residual areas.

Material and method: patients with scald burns who arrive for care in the first 24 hours post-burn are included, gentle cleaning with saline solution was performed and Epicite was applied, it was covered with vaseline gauze and bandage, the lesions were reviewed on the 5th day and tangential scarectomy of residual eschars and application of Epifast was made, Finally, the lesions were evaluated at 10 days of evolution.

Results: 25 patients with an average age of 4.2 years, who met the inclusion criteria, with average TBSA of 14%, in which the residual area after the use of Epicite was on average 5% of the TBSA, in the last evaluation 100% with total epithelialization without the need for autogrnanocellulose biotechnologically manufactureafts. There were no infections or side effects.

Conclusions: The use of Epicite (Nano cellulose biopolymer) as a first-line dressing in the former, prevents the drying of the wound and helps the epithelialization of the most superficial areas and with the help of a biological dressing donor of growth factors as complementary therapy is an excellent option in the management of second-degree burns.

O4.2.1

Major Burn Simulation Training: setting up a regional course

Mousa S[1], Prokopenko M[1], Eldolify M[1], Murray L[1], Murray A[1]
[1]Buckinghamshire NHS trust, Aylesbury, United Kingdom

AIM:
To establish a major burn simulation course to support delivery of quality burns care across the Thames Valley region.

METHODS:
This is a before-and-after questionnaire-based study describing the set-up and introduction of a simulation course in managing acute burns. The title is abbreviated as 'SOBS'- the Stoke-Mandeville and Oxford Burn Simulation course.

The course content complies with existing standard frameworks including the 'Emergency Management of Severe Burns' course and supports learning particularly for trainees who lost training opportunities through the COVID pandemic. We aim to deliver the course three to four times annually, with costs kept to a minimum for attendees. Our target audience includes clinicians, nurses, and advanced-clinical-practitioners across emergency and surgical care services who are likely to encounter burn injuries.
This is a one-day course using high-fidelity simulation to recreate scenarios encountered during acute burn management. Our course features skills training such as how to carry out an escharotomy using a realistic, validated model and debridement and dressing of burn wounds.

RESULT:
Two iterations of the course have been conducted for plastic surgery and anaesthesia trainees. Collated feedback received described the course as useful (84%), meeting expectations (80%) with high overall satisfaction (90%). Feedback comments received were positive, such as "really useful teaching, filling a big gap in my knowledge. Would recommend".

CONCLUSION:
Simulation courses are an effective and innovative way to train healthcare professionals on managing major life-threatening burns cases allowing learning in a safe environment, maintaining patient safety, and enhancing learning opportunities.

O4.2.2

Assessing activity of the French Military Burn Center during the COVID-19 pandemic 2019-2022

Donat N[1], RENNER J[1], LAURENT M[1], BAUDIC T[1], LECLERC T[1]
[1]Burn Center, Percy Military Hospital, Clamart, France

Aim:
The intensity and duration of COVID-19 crisis undermined the French healthcare system and exposed major logistical and human resource difficulties. We assessed burn care activity at the HIA Percy Burn Center during this period.

Methods:
Beds available for burn intensive care (BICU) and medico-administrative codes related to burn care for the burn unit were collected from 2019 to 2022.

Results:
In 2019, 12 BICU beds were operated and 133 patients treated.
From 2020 to 2021, available beds varied from 6 (first wave) or 9 (2nd, 3rd waves) to 12. In 2022, only 9 beds were opened. Ìn 2020, 107 burnt patients were treated, 108 in 2021, and 100 in 2022. TBSA repartition were similar.

Conclusion:
2019 is the benchmark year. Year 2020 was marked by COVID-19 outbreak. First wave led to a reorganization of critical care within the hospital: BICU was reduced to 6 beds in order to free up space and staff to increase capacity. The second and third waves of COVID-19 led to a similar reduction in burn capacity to 9 beds. In 2022, the shortage of paramedical staff, especially nurses, led to the closure of 3 beds. This situation had the worst impact as the bed-reduction was permanent. Difficulties observed in this study are consistent with international experience (1).
Overall, BICU activity was reduced during the COVID pandemic and was not restored. This is a major concern to ensure burn care availability and skilled burn teams.

References:
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O4.2.3

Survey on the present burn care facilities and retrospective analysis of burn injury incidence in Greece: data from a multicenter study, stressing the need of initiating a National Burn Registry

Papadopoulou S[1], Nikolaidou E[1], Makarona K[1], Ligomenou T[1], Tzimorota Z[1]
[1]"G. Papanikolaou" Hospital, Thessaloniki, Greece, Thessaloniki, Greece

Aim:
The purpose of this observational, multi-center study was to collect data on the burn care facilities and to estimate the burn injury incidence, as well as epidemiologic, etiological and clinical aspects of adult hospitalized burn patients in Greece.

Methods:
A two-part questionnaire was e-mailed to 13 Burn Units and Plastic Surgery Departments in Greece. The first part included questions on personnel, facilities, equipment and practices. The second part retrospectively collected demographic, clinical and outcome data of hospitalized burn patients in a set 1-year period.

Results:
Of the 13 hospitals, 11 responded (85%). A total of 12 Burns ICU beds were available in dedicated burn units, whereas in 3 more hospitals intubated burn patients are treated in General ICU. 2-8 Consultant Plastic Surgeons work in each center with 0-14 residents. There is usually collaboration between Plastic Surgeons and Intensivists on critical care, infection control, nutrition.
Regarding the second part the 11 centers reported 577 patients (55% men) with average TBSA 26%. Average age was 57 years and the most frequent type were thermal burns (82%) with chemical and electrical burns representing 4.5% each. Overall mortality reported was 10%.

Conclusions:
This pilot questionnaire showed the variability of burn care between centers in Greece and the difficulties of retrospectively collecting data not digitally recorded prospectively. The importance of a National Burn Registry in order to have a precise picture of Burn Injury incidence and Burn Care needs, to evaluate our services and to initiate and implement targeted prevention programs is stressed.

O4.2.4

Thirty-six years of BABI plan: accomplishments and developments of the Belgian mass burn casualty disaster plan

Jennes S[1], Saidane G, Debry F
[1]Grand Hôpital de Charleroi, Charleroi, Belgium

Aim
Lessons learned from the implementation of the BABI plan during the last 36 years.

Methods
We have reviewed six burn disasters that have struck Belgium since the creation of the Belgian Association for Burn Injuries (BABI) in 1987. One of the goals of this association is to maintain and update a coordination plan for burn beds in case of mass casualty incident (MCI) with many burn victims. The goals of the plan are: 1. the rapid and effective warning of all Belgian burn centers (BBC) and an increase in their capacity in beds ; 2. to give a rapid medical response at the place of the incident or in the evacuation hospitals, mainly triage by a B-Team; 3. the organization of the distribution of the victims through the different BBC; 4. to contact the BC in the neighboring countries in the search for burn beds in case of a disaster overwhelming the national treatment capacities

Results
We have reviewed the following disasters: 1. the auditorium attack in Brussels in 1990; 2. the Switel hotel fire in Antwerp in 1995; 3. the café fire in Volendam in 2001; 4. the Cockerill explosion in Liège in 2002; the gas pipeline explosion in Ghislenghien in 2004; the Brussels terror attacks in 2016. There were in total 701 injured; 264 were hospitalized and 75 have died (58 outright).

Conclusions
The BABI plan has been efficient in terms of speed of implementation and distribution and evacuation of the victims and cross-border cooperation.

O4.2.5

From RE-ENERGIZE to VICToRY: Buildling the first international consortium for clinical trials in burns

Pruskowski K[1], Cancio L[1], Dansereau M[1], Stoppe C[1], Heyland D
[1]United States Army Institute Of Surgical Research, JBSA Fort Sam Houston, United States

Aim:
Conducting randomized controlled trials (RCTs) to improve burn care is challenging. To address this challenge, a large, international, multicenter consortium was formed. This unprecedented consortium completed an RCT of glutamine therapy in burns, and is now conducting a RCT of moderately high-dose vitamin C. This abstract will review the logistics of implementing this program of research.

Methods:
RE-ENERGIZE ("A Randomized trial of ENtERal Glutamine to minimIZE thermal injury") was a double-blind RCT that evaluated enteral glutamine initiated within 72 hrs of admission. VICToRY ("VItamin C in Thermal injuRY") is a double-blind RCT that is evaluating intravenous vitamin C initiated within 24 hrs of admission. All research is approved by local ethics committees/institutional review boards.

Results:
RE-ENERGIZE:A total of 125 sites in 38 countries were engaged; 54 sites in 14 countries enrolled patients. In the pilot/feasibility phase, the enrollment rate was 0.96 patients/site/month (range 0.68-1.31), and this decreased to 0.44 patients/site/month (range 0.07-1.74). A total of 1209 patients were enrolled.
VICToRY: A total of 138 sites in 32 countries have been engaged; 11 sites in 4 countries have been activated; and 44 sites in 14 countries are projected to be activated by Summer 2023. The enrollment rate is 0.4 patients/site/month (range 0.2-1.0).

Conclusions:
RE-ENERGIZE demonstrated the feasibility of international RCTs to improve burn care. The RE-ENERGIZE network is now being leveraged in the VICToRY trial. The key to success is developing and maintaining strong, positive relationships with international partners, and assisting them in overcoming obstacles unique to their environments.

O4.2.6

Impact of decreasing burn bed capacity on non-admission rates: a 7-year retrospective study in a French military burn centre

Donat N[1], RENNER J[1], SCHAAL J[1], LAURENT M[1], HOFFMANN C[1]
[1]Burn Center, Percy Military Hospital, Clamart, France

AIMS
Over recent years, decreasing healthcare staffing has led to decreasing bed capacity in French burn centres, further impacted by temporary reductions due to XDR bacteria importation or to re-allocation of burn ICU beds to COVID-19 care. This study aims at assessing how this has impacted the capacity of our military burn centre to answer population needs.

METHODS
The electronic registry of all medical calls to our burn centre was retrospectively analysed from March 2016 (registry opening) to April 2023 and compared with open burn bed capacity. Summary data, expressed as mean per full year, included total calls, admission requests, and rebuttals (for lack of available bed and for absence of indication). Burn bed capacity changes with time and association between burn bed capcaity and percentage of admission rebuttal for lack of beds were analysed using linear regression.

RESULTS
Over 7 years, our burn centre received 452±45 calls each year (yearly increase +16 calls, p=0.004), of which 208±15 admission requests (no significant evolution trend). The yearly mean number of open beds decreased from 13 to 9 (yearly decrease -0.5 beds, p=0.003). The yearly admission rebuttal rate was 39±2.5 % among definite indications (38 % with 13 open beds, 42 % with 9, variation NS).

CONCLUSIONS
Facing similar capacity limitation as civilian burn centres, ours declines 4 out of 10 admission requests with definite indication, with unclear evolution trend. A national registry would help assess whether corresponding patients finally access specialised burn care, hence dimensioning burn care capacity.

O4.2.7

Influence of electron beam irradiation on extracellular matrix of the human allogeneic skin grafts

Łabuś W[1], Strzelec P[1], Ziółkowska K[1], Klama-Baryła A[1], Wielgórecki A[1]
[1]Dr. Stanisław Sakiel Centre For Burn Treatment In Siemianowice Śląskie, Siemianowice Śląskie, Poland

Aim: The non-viable allogeneic human skin grafts might be considered as the most suitable skin substitutes in the treatment of extensive and deep burns. However, in accordance to biological security such grafts require the final sterilization prior to clinical application. The aim of the study was to verify the influence of electron beam irradiation of three selected doses: 18 kGy, 25 kGy and 35 kGy on the extracellular matrix of human skin.

Methods: Prior to sterilization, the microbiological tests were conducted and revealed contamination in all examined cases. Individual groups were subjected to single electron beam radiation sterilization at proposed doses and then subjected to microbiological tests again. The results of microbiological testing performed for all irradiation doses used were negative. Only in the control group was a growth of microorganisms observed. The FTIR spectrometry tests were conducted followed by the histological evaluation and mechanical tests. In addition, cost analysis of radiation sterilization of individual doses were performed.

Results: The results of spectroscopic analysis, mechanical tests and histological staining showed no significant changes in composition and characteristics of tested tissues after their irradiation, in comparison to control samples. The cost analysis has shown that irradiation with 18 kGy is the most cost-effective and 35 kGy is the least favorable.

Conclusions: According to biological risk reduction, the recommended sterilization dose is 35 kGy, despite the higher price compared to the other doses tested.

O4.3.1

Non-invasive physical plasma of helium (generating highly reactive oxygen and nitrogen species) application as an adjuvant treatment of Epifast in superficial and deep second-degree burns.

Rodriguez-ferreyra P[1], Lopez-Callejas R[2], Narvaez-Robles T[1], Gayosso-Ceron O[1]
[1]Instituto De Salud Del Estado De Mexico, Toluca, Mexico, [2]Instituto Nacional de Investigaciones Nucleares, , Mexico

Aim: demonstrates that non-thermal plasma or non-invasive physical plasma (NIPP) as adjuvant therapy to Epifast help to improve the healing process carried out in patients with second-degree burns.

Methods: NIPP of helium generate highly reactive oxygen (hydroxyl radicals (·OH)) as antiseptic and nitrogen species (nitrogen dioxide (NO2)) as aniinflamatory. Patients divided in: Group 1: Scarectomy in the first 48 hour after burn and wound coverage with Epifast, evaluation of the wound after 5-6 days, and Group 2: received in the first surgery the application of NIPP direct over the wound and coverage with Epifast, NIPP application every 24 hours and evaluation of the wound after 5-6 days).

Results: Forty patients were included, 20 (Group 1), and 20 (Group 2). total body surface burn (TBSB) was 12.60%(+-) 8.2 for Group 1 and 12.55%(+-) 8.06 for Group 2. There were no adverse effects. DOS, use of analgesics and antibiotics were slightly less in the experimental group, although without significant statistical difference. Regarding the grafted patients, it was representative in favor of the experimental group since only two patients (10%) were grafted. In comparison, it was necessary for eight patients (40%) of the control group, with a relative risk (RR) of 0.25 and a 95% confidence interval (CI) ±0.06-1.0 (p=0.02).

Conclusion: The use of NIPP as adjuvant therapy of the Epifast reduces the need for graft placement in burn patients by 75%, and the no incidence of adverse effects, this demonstrates its efficacy and safety in treatment of superficial and deep second-degree burns.

O4.3.2

Retrospective analysis study: enzymatic debridement (ED) in large burn patients

Minic J[1], Vigato E[1], Governa M[1]
[1]Azienda Ospedaliera Universitaria Integrata Verona, Verona, Italy

Objective: Early surgical debridement is mandatory in treatment of massive burned patients. The feasibility of such procedure is not alway possible due to the complexity of the patient, its general conditions, hemodynamic stability, availability of hospital and human resource . Objective of the study was to evaluate the use of early bromelain-based debridement on a patient population up 15%TBSA.

Method:We conducted a retrospective study collecting consecutive adult large burn patients up 15%TBSA admitted in Verona Burn Center from 2017 to 2021 and treated with bromelain-based ED. The study sample consisted of 65 subjects treated with Nexobrid (ED). The study was approved by the Institutional Review Board (Number 2214CESC) with waiver of informed consent due to the retrospective nature of the study. The analysis was carried out using Stata MP17 software.

Result:A total of 65 cases were treated with Nexobrid®. Average TBSA was 35.29. Max treated area was 70% TBSA. Mean time for debridement 1.6 day. Mean auto-grafting was 9%;Twelve out of 65 had sepsis. Average hospitalization was 44.21.ED was applied at bedside in 42 cases ;13 cases in OR. Only 6/ 65 cases needed a blood transfusion.

Conclusion: Our protocol could prove a feasible additional alternative to the surgical excisional debridement and its associated drawbacks. Data demonstrate significantly reduced blood loss, improved dermal preservation, reduced need for autografting, and a reduction in the number of OR theatre. and its potential safety.

O4.3.3

Utilizing Unsupervised Clustering and Latent Class Analysis to Evaluate Clinical Heterogeneity and Predict Mortality in Severely Burned Patients: A Retrospective Cohort Study"

Yoon J[1], Kym D[2], Hur J[3]
[1]Hangang Sacred Heart Hospital, Hallym University, Seoul, South Korea, [2]Hangang Sacred Heart Hospital, Hallym University, seoul, South Korea, [3]Hangang Sacred Heart Hospital, Hallym University, seoul, South Korea

Burn injuries have clinical heterogeneity and poor prognosis in severely burned patients. Clustering algorithms can provide insights into the mechanisms of disease pathogenesis
The aim of study was to analyze collected biomarkers in order to understand mortality prediction power, identify clinical meanings or subtypes, and inform treatment decisions in order to improve outcomes.
Retrospective cohort study included patients who were admitted between January 2010 and December 2021. These patients were divided into four subgroups of their admission: week 1 to 4.

Results: The study showed that 22 biomarkers were evaluated, with RDW, bicarbonate, pH, platelets, and lymphocytes being significantly associated with mortality risk. Latent class analysis further demonstrated that pH, platelets, lymphocytes, lactate, and albumin had worst in the cluster with the highest risk of mortality, with the worst of pH and lactate being particularly noteworthy in the first week. During second week, pH and lymphocyte were found to be significant predictors of mortality risk, while lymphocytes and platelets were meaningful predictors in third week. In fourth week, pH, platelets, and albumin were considered as predictors of mortality risk.

Conclusions: The analysis of biomarkers using clustering algorithms and latent class analysis can provide valuable insights into the heterogeneity of burn injuries and improve the ability to predict disease progression and mortality. Our findings suggest that lactate is a indicator of cellular hypoxia in the early stages of shock, while platelet and lymphocyte are indicative of infection. Albumin is a indicator of reduced nutrition, and pH reflect condition of the patient.

O4.3.4

Use of High Flow Nasal Cannula in critical burn patient during deep sedation in enzymatic bromelain debridement (Nexobrid®): preliminary report

Sala C[1], Coletta F[1], Notaro M[1], Longobardi A[1], Tomasello A[1]
[1]Burns Intensive Care Unit and Poison Control Center, Naples, Italy

OBJECT:
The use of new oxygen supports associated to non invasive respiratory strategies is well-established in the clinical practice, especially after its extensive application in the management of Covid-19 respiratory failure. The use of High Flow Nasal Cannula (HFNC) in patients undergoing Procedural Sedation and Analgesia (PSA) is dramatically increasing. Enzymatic debridement in critical burn patients is a painful treatment that requires an optimal burn pain control protocol as well as a deep sedation for the entire duration of the procedure. Both hypnosis and opioid-analgesia may lead to significant respiratory depression.

METHODS:
Fourteen patients undergoing enzymatic debridement under deep sedation have been included in this case study. All patients receiving oxygen through HFNC were evaluated. All patients underwent continuous monitoring of vital parameters, antithrombotic prophylaxis with low molecular weight heparins and fluid therapy calculated using the Parkland formula.

RESULTS:
Sedation was successful and well tolerated by all patients and physicians were able to carry out the enzymatic debridement procedure safely. No severe desaturation events were observed. Continuous monitoring of vital signs was carried out. Neither bradycardia events nor hypotensive or hypertensive events requiring treatment occurred.

CONCLUSIONS:
Enzymatic debridement procedures did not lead to any serious adverse events. Based on our experience , the administration of O2 by HFNC at an average concentration of 50% was proven safe and efficacious in the management of drug-induced respiratory depression.

O4.3.5

Severe methemoglobinemia after using a local anesthetic in a child with a burn.

Yehorov S[1], Posunko A[1], Vlasov A[1], Fuzaylov G[2]
[1]Regional Medical Center For Family Health, Dnipro, Ukraine, [2]Massachusetts General Hospital, Boston, USA

Introduction. The objective of this case report is to present a patient with acquired methemoglobinemia due to poisoning of unlabeled use of local anesthetics. The toxic effect leads to disruption of the processes of oxidative phosphorylation in erythrocytes with the formation of methemoglobin incapable of oxygen transport.
A 10-year-old boy suffered flame burns with a TBSA up to 60%. He was treated in the ICU of the Regional children's hospital. Child general condition acutely deteriorated with central cyanosis, severe tachycardia, arterial hypotension, and a decrease in SpO2 to 76% on day six after. During systematic exam and laboratory evaluations of child hypoxemia we decided to analyze the level of methemoglobin, which turned out to be positive and amounted to 22%. To establish the cause, we conducted a complete analysis of the medications that the patient received. The source of intoxication appeared to be an ointment that was used twice a day on burned surface as a local wound treatment, that contained prilocaine.

Result. Methemoglobinemia symptoms are the results of inadequate oxygen transport. For the treatment of this condition, methylene blue was used at a dosage of 2 mg/kg with an extended infusion over 30 minutes. There was a gradual regression of intoxication, lactic acidosis, and hypoxemia with complete stabilization of vital functions in 2.5 hours after the introduction of the antidote.

Conclusions. Our case highlights the need for in-depth routine monitoring of local anesthetics that used on burn surface in in children

O4.3.6

Bench-to-bedside assessment: high-dose vitamin C therapy In burn patients with septic shock

Mokline A[1], Nachi R[1], Fraj H[1], Gargouri M[1], Messadi A[1]
[1]Trauma And Burn Center, Tunis, Tunisia

Aim: Assess impact of high dose vitamin C (100 mg/Kg/d) in septic burn patients in terms of fluid ressuscitation, dose, and duration of catecholamines .

Methods : Case-control study conducted in intensive burn care department in Tunisia during 26 months . Were included adult burns presenting sepsis or septic shock. Were excluded pregnant woman and patients under long-term vitamin C therapy. After inclusion, ascorbic acid was prescribed at a dose of 100 mg/kg/day over 4 days. The vitamin C group was compared with a retrospective group (non-vitamin C) from the same center matched in terms of age, sex, extent and burn severity. Therapeutic management of sepsis was similar for 2 groups with same hemodynamic objectives (hourly output at 0.5cc to 1cc/kg and MAP > 65 mmHg).

Results : 100 patients were included divided into 2 groups : G1 (Vit C+ ; n= 50) and G2 (Vit C- : n= 50). Patients of 2 groups were comparable in terms of sex, age and severity of burns. Administration of vitamin C reduced at day 3, fluid balance (2 ml/Kg/day for G1 vs vs 13 ml/kg/ day for G2 ; p= 0,008), and doses of noradrenaline (1,8 mg/h vs 3,5 mg/h ; p= 0,01), and shortened duration of noradrenaline dependance (4 days for G1 vs 4,84 days for G2 ; p= 0,28).

Conclusions: High-dose vitamin C therapy was associated with reduced fluid balance, doses of noradrenaline and duration of dependance in septic shock burns within the first 3 days of sepis.

O4.3.7

Long-term mortality after self-inflicted burns

Pompermaier L[1], Steinvall I[1], Elmasry M[1], Abdelrahman I[1], Sjoberg F[1]
[1]Department of Hand Surgery, Plastic Surgery and Burns, Linköping University, Sweden, Linköping, Sweden

Aim: Self-inflicted burns are a small but consistent group among burn patients, with large injuries and conflicting findings regarding their in-hospital mortality. Overall, burn survivors have a shorter live expectancy, as compared with national controls, but long-term mortality after self-inflicted burns is understudied. Aim of this retrospective study was to investigate possible differences in long-term mortality among survivors after self-inflicted and accidental burns.

Methods: All patients with burns admitted at the Linköping Burn Center and discharged alive between 2000 and 2017 were included, and end of follow up was the 26th of April 2021. Those with unknown survival status at that time were excluded. A Cox proportional hazards regression was used to analyse long term mortality adjusted for age and sex.

Results: Among the 1462 patients included in this study, 38 were self-inflicted burns. Overall, median follow up period was 9.1 years and crude mortality was 16.1%. The risk adjusted mortality analysis showed that self-inflicted burns was a factor independently associated with long-term mortality, Hazard Ratio= 2.04 (95% CI 1.11–3.76). Post hoc analysis showed that the effect was most pronounced during the first years after discharge although it was noticeable over the whole study period.

Conclusion: Long-term risk of mortality after discharge from a burn centre was higher in the subgroup of self-inflicted burns compared with accidental burns. The effect was noticeable over the whole study period although it was most pronounced during the first years after discharge.